Ruxandra Mihaela BOTEZ, Full Professor, PhD, Eng., FAIAA, FCASI, FCAE, FRAeS, FIAAM, FAAIA
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1. EDUCATION

Diploma	Graduation year	Specialization	Place, Country
M.Eng.	1984	Aircraft Design	Facultatea de Inginerie Aerospațială, Bucharest, Romania
M.Sc	1989	Semi-Empirical Dynamic Stall Methods for Helicopters Design	Polytechnique Montréal, Montreal, Canada
PhD	1994	Fluid-Structures Interactions and Nonlinear Dynamics	McGill University, Montreal, Canada

2. PROFESSIONAL EXPERIENCE

Position and Organization	Department	Period of time
Full Professor at École de technologie supérieure ÉTS, University of Quebec, Montreal, Canada	Automated Production Engineering, and since 2020, it became Systems Engineering In 2024, she became Professor in the Sustems Engineering Department and in the Aerospace Engineering Department.	2004 -
Associate Professor at École de technologie supérieure ÉTS, University of Quebec, Montreal, Canada	Automated Production Engineering	1998 - 2004
Research & Development Engineer, Aeroservoelasticity Task Leader at Bombardier Aerospace, Dorval, Canada	Loads and Dynamics	1995 - 1997
Postdoctoral Researcher at Auburn University, USA	Mechanical Engineering	1994 - 1995
PhD Student and Research Assistant at McGill University, Montreal, Canada	Mechanical Engineering	1989 - 1994
MASc Student and Research Assistant at École Polytechnique, Montreal, Canada	Mechanical Engineering	1987 - 1989
Engineer at ICA (today: IAR S.A. Brașov), Brașov, Romania	Spare Parts Design for Alouette and Puma Helicopters	1984 - 1987

Dr Botez is presently Full Professor at the École de technologie supérieure, University of Quebec in Montreal, Canada and she is the Canada Research Chair Holder in Aircraft Modeling and Simulation New Technologies since January 2011, Canada Research Chairs.

Professor Botez is also the Founder and Head of the Laboratory of Applied Research in Active Controls, Avionics and AeroServoElasticity LARCASE since 2003, where more than 45 students and researchers work every semester on various projects. In the next section, the LARCASE is described.

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3. MAIN CONTRIBUTION AS PROFESSOR: FOUNDER AND HEAD OF THE AERONAUTICAL RESEARCH LABORATORY LARCASE AT ETS

Prof. Botez is the founder and director of the Laboratory of Applied Research in Active Controls, Aeroservoelasticity and Avionics LARCASE, multidisciplinary aeronautical laboratory at ÉTS since 2003. She was the only responsible as professor of the LARCASE. In 2021, two other professors became part of the LARCASE team. One of them, Dr Georges Ghazi became assistant professor at ÉTS in 2021, and he has worked with Dr Botez as Internship, Master and PhD student under her supervision since 2013. Dr Tony Wong, the other professor at the ÉTS, is specialized in artificial intelligence. The website of the LARCASE is updated on a regular basis

3.1 LARCASE Equipements

There are four main equipments at the LARCASE that are used mainly in the Canada Research Chair in Aircraft Modeling and Simulation New Technologies. Three of these large-scale equipments were obtained by Dr. Botez with research grants from the Canadian Foundation of Innovation CFI, the Ministère du Développement Économique, Innovation et Exportation MDEIE, while the fourth equipment (subsonic wind tunnel) was a donation. These equipments are explained in the next paragraphs of this section.

In **2009**, Dr. Botez has successfully obtained an important infrastructure equipment from CAE and Cessna, funded by the MDEIE, CFI and CAE, called the Research Aircraft Flight Simulator (RAFS). This equipment, valued at **463.657 CAD**, has an open-source code for the flight dynamics of the Cessna Citation X (CCX) business aircraft, which is one of the fastest aircraft in its category; the flight dynamics has the highest-Level D Federal Aviation Administration (FAA) certification, and for this reason, this simulator is extremely helpful in the advancement of aircraft modelling and simulation.

Professor Michael Païdoussis, former PhD advisor of Dr Botez, has donated in **2010** the large blow-down subsonic wind tunnel that was developed and used at McGill University during 20 years in the Mechanical Engineering Department, by Professor Stuart Price and himself to Dr. Botez at the ÉTS to be used at the LARCASE. Professor Païdoussis is well known in the area of fluid-structure interactions, and he is the Thomas Workman Emeritus professor, while Professor Price is very well known in the area of aeroelasticity. This donation is valued at more than **800.000 CAD**.

The Research Aerial System (RAS) was obtained in **2011** at the LARCASE. The RAS is based on the Unmanned Aerial System UAS-S4 Éhecatl, and it was designed, developed and manufactured by the Mexican company Hydra Technologies. The UAS-S4 is used extensively by the Police and the Air Forces in Mexico, which justifies its high scientific quality, reputation and reliability. This equipment was obtained with research funds of approximately **410.000 CAD** from the CFI, MDEIE and Hydra Technologies.

In **2019**, Dr. Botez has successfully obtained an important infrastructure equipment from CAE and Bombardier, funded by the CFI, MDEIE and CAE, called the Virtual Research Simulator (VRESIM). This equipment, valued at **349.736 CAD**, has an open-source code for the flight dynamics of the CRJ-700 regional transport aircraft; the flight dynamics has the highest-Level D FAA certification, and for this reason, this simulator is extremely helpful in the advancement of Bombardier type aircraft modelling and simulation.

Therefore, the LARCASE is equipped, as mentioned above with **four major research equipments**: 1) the *Price – Païdoussis* Subsonic Blow-Down Wind Tunnel, 2) *Research Aircraft Flight Simulator* (RAFS) Level D (highest level of certification given by the FAA for the flight dynamics of the CCX from Cessna), *Research Aerial System* (RAS) based on the UAS-S4 from Hydra Technologies, and the *Virtual Research Simulator* (VRESIM) *for Commercial Aircraft New Technologies Development* Level D (highest level of certification given by the FAA for the flight dynamics of the commercial regional aircraft CRJ-700 from Bombardier). The Appendix 1 shows all these equipments, that are also found on the LARCASE website in the Equipments section.

These equipments are valued therefore at approximately **2 mil. CAD** and they are unique in the academic environment, mainly because of the flight test data confidentiality in companies and therefore, these equipments are difficult to obtain in universities. The RAFS, VRESIM and RAS are unique as they were developed by industrial partners (CAE, Bombardier, Cessna and Hydra Technologies) for research needs of the LARCASE team. From our knowledge, the LARCASE is the only aerospace academic laboratory to presently have this type of research equipements combination.

3.2 LARCASE Infrastructure (in terms of office space for equipments and students)

The LARCASE is situated in 2 buildings at the ÉTS in Montreal.

In the first building, located at 1100 Notre Dame West, there are two large offices: A-3420 office (total surface of 128 m^2) and A-3752 (total surface of 72 m^2). In the A-3420, there are two other offices, where a special card is needed, due to industrial data confidentiality, to give access only to the LARCASE team working on the Level D two research flight simulators, RAFS (Room A-3420.1 of 20 m^2 surface) and VRESIM (Room A-3420.2 of 10 m^2 surface). A total of 26 workstations are located in the office A-3420. In the A-3572 office (total surface of 72 m^2), there are two other offices (where a special card is also needed to give the access to the LARCASE team working on the Unmanned Aerial Systems UAS-S4 measurements and aerodynamics (Room A-3572.1 of 25 m^2 surface) and on their research flight simulator development (Room A-3572.2 of 10 m^2 surface). A total of 12 workstations are located in the office A-3572.

In the second building, located at 1050 Williams St., S-0003, there is a third main office of the LARCASE where the subsonic blow-down wind tunnel is installed, as well as 7 workstations and 14 screens.

Therefore, 45 workstations are available at the LARCASE, which justifies the possibility for a number of more than 45 students to work every semester at this laboratory. For this reason, Dr Botez had to develop recruitment qualities and strategy, which are explained in the next section.

3.3 Students recruitment strategies

Dr. Botez was one of the professors responsible for initiating the two ÉTS student competition teams for the design and operation of two vehicles: **SONIA-AUV** and **DRONOLAB-Aéronef Autonome** at the ÉTS. SONIA-AUV is an intelligent and autonomous nautical operations system and **DRONOLAB-Aéronef Autonome** is an autonomous aircraft. Dr. Botez recruits graduate students at ÉTS from these excellent competition teams, as well as from the ***Avion Cargo*** team.

Since 2006, Dr. Botez recruites the highest number of undergraduate students at the LARCASE from two French Aerospace universities, ESTACA and EPF in France. Some of these students choose to work in Canada at the end of their internships at the LARCASE.

Dr Botez has signed international collaboration agreements as ÉTS representant with various universities in Europe (France, Italy, Romania, Turkey) and in Brazil with the aim to recruite Master's and PhD students from these countries:

- ESTACA, Paris, France
- Bologna University, Italy
- Craiova University, Romania
- Academia Tehnică Militară, Bucharest, Romania
- Facultatea de Inginerie Aerospațială - Universitatea Politehnica din București, Romania
- UNESP, Sao Paulo, Brazil
- Eskisehir University, Turkey

Since 2008, Dr. Botez has been actively involved in two teaching and research programs. She was responsible for the establishment of the Master's degree program in Aerospace Research Engineering, and of the Bachelor's degree program in Aerospace Engineering (Electrical, Mechanical and Automated Production Engineering programs). The Master's in Aerospace Research Engineering was approved in summer 2009, and the first students enrolled in September 2009. ÉTS attracts a large number of undergraduate and graduate students in the aerospace field, from Quebec and from all over Canada, as well as internationally. Dr Botez was also the responsible of the Bachelor in Aerospace Engineering Program in the Department of Systems Engineering at ÉTS.

3.4 Graduated students' interest in the research environment created at the LARCASE

At the LARCASE, students acquire the experience and expertise required to work in aerospace aircraft design and research companies and institutes in Canada. The opportunity to offer this rare expertise to graduate students is possible because of the excellent research environment provided at the LARCASE, which is one of the best-equipped academic aeronautical laboratories in Quebec, and probably in Canada, in terms of geometrical and experimental (flight and wind tunnel) data for aircraft and rotorcraft.

The high interest demonstrated by students in the multidisciplinary research fields at the LARCASE may be explained by the scientific and technical aspects of research projects that have been funded there to date by aerospace companies and government organizations. Flight and wind tunnel tests have been performed by aerospace companies on real aircraft and helicopters, and the data was provided to Dr Botez's team to validate newly-developed aircraft and helicopter simulation models.

The website of the LARCASE laboratory at ÉTS is continuously being updated and provides details on research projects, graduate students' names and publication content. In fact, this laboratory website facilitates industrial collaborations and student recruitment, both at the national and international levels.

In addition, researchers and professors from various universities, research institutes and companies have visited Dr. Botez at LARCASE at the ÉTS to attend presentations given by her and her students on their research projects, to present their own research, and therefore, to discuss and establish common research collaboration axes. For exemple, international researchers have visited LARCASE from research institutes such as NASA DFRC and NASA Langley in the USA, ONERA in France, FOI in Sweden, from companies Embraer in Brazil and J2 in Great Britain, and from universities: Florida University in the USA, KTH in Sweden, Frederico II in Italy, the University of Craiova and the Faculty of Aircraft Design in Romania. These interactions are very interesting for students, as they contribute to enrich their experience and expertise

3.5 Details regarding the graduated students under the supervision of Dr Botez (in August 2024)

In all her academic career, since 1998, in August 2024, Dr Botez has graduated **292 Bachelor's, 1 Master's certificate, 164 Master's (66 Thesis and 98 Project) students and 29 PhD students**. She is currently supervising **3 Bachelor's Project, 5 Master's (3 Thesis and 2 Project) and 7 PhD students.**

All these students finalised their projects or their theses on research subjects related to the projects performed at the LARCASE under her academic supervision. It is important to mention that all these students were remunerated from Dr Botez' research grants. A high number of 53 students graduated under the supervision of Dr Botez have received **excellent** grades for their projects and theses at the LARCASE.

The **students graduated under the leadership of Dr Botez have obtained a high number of 29 awards for their articles published or presented at various scientific events.** Therefore, the students working on research projects under Dr Botez' supervision have received **14 awards** at various competitions, such as the Student Aerospace Forum (SAF) organized by CRIAQ and the American Helicopter Society (AHS) and those organized at the ETS. In addition, the students have received **11 awards** for their presentations at international conferences, and **4 awards** for their articles published in international journals and conference proceedings.

Professor Botez received 30 international awards, recognitions, certificates, including the titles of fellowships of various organizations, while the most important recognition was the AIAA Fellowship obtained in 2024. She has also received the ETS Research Excellence Award twice at ÉTS, in 2007 and 2024.

She has also received 4 awards as project leader from CRIAQ, Presagis and the Italian Chamber of Commerce, as well as one important award as participant in a NATO project. This award is called the *Research and Technology Organization RTO Scientific Achievement Award 2012,* and therefore is the most prestigious award offered to the research team of the AVT-161 "Assessment of Stability and Control Prediction Methods for NATO Air and Sea Vehicles" by NATO. Therefore, **Professor Botez has received a total of 34 international awards.**

3.5.1 Bachelor's in Engineering Graduated Students at the LARCASE

Dr Botez graduated a high number (almost 300) of **Bachelor's students;** they have done their internship projects during 4, 8 or 12 months at the LARCASE in collaboration with their universities (where they were registered). More than 200 among these students, were **international Bachelor's students,** and they have worked on internship research projects at the ÉTS in Aerospace Engineering from 5 countries and 34 universities during 2004-2020. All these Bachelor's students have finalized their internships during 4, 8 or 12 months at the LARCASE.

Most of these international students were registered in French universities, and 70% of them graduated from ESTACA and ÉPF. The other French students have graduated from other French universities, such as INSA Lyon, École de l'Air, Polyetch, École Polytechnique, Université de Nantes, ENSE3, ENSIAME, ENSICHEN, ENSEIRB-MATMECA, ENSEEIHT, ENSMA, ENSMM, ESIGETE, IPSA, SUPAERO, SUPELEC, SUPMECA, UTBM and Université de Poitiers.

The rest of **students** were registered in universities from other countries, such as Tunisia (ENIM, ENIS, ENIT, ESAT, INSAT, ESTI), India (University of Petroleum & Energy and IIT Guwahati in India), Japan (Osaka Prefecture University), Spain (Polytechnic University of Valencia), Mexico (UAQM, Universidad Politécnica de Tulancingo) and many other countries.

Dr Botez has also **Bachelor's students** registered at the ÉTS and at the other 3 Engineering universities in Montreal: Concordia University, Polytechnique and McGill University.

3.5.2 Master's in Engineering Project Graduated Students at the LARCASE

Dr Botez has graduated in her academic career, a number of 98 Master's in Aerospace Engineering project students. Few of these Master's students were registered at other Quebec universities in the common Master's in Engineering Program, such as Polytechnique, Concordia, Laval and Sherbrooke universities, and they have finalized their Master's projects at the LARCASE.

A high number of international Master's students finalized their projects at the LARCASE, ÉTS in collaboration with other universities from different countries. Most of these international students came from France, as they were registered at French universities, such as: ESIGELEC, INSA Lyon, Université de Bordeaux, Université de Technologie de Campiègne, as well as in Netherlands at the Delft University, in Romania at the Aerospace Engineering Faculty (Facultatea de Inginerie Aerospațială), and in many other universities from different countries.

Prof. Botez was also the supervisor of Master's in Engineering students working in various companies in Montreal during their internships of 4 or 8 months. These companies are the following: Bombardier, Airbus, Canadian Space Agency, CAE, Pratt & Whitney Canada, Siemens and other companies.

All these **Master's in Aerospace Engineering students** have finalized their internship projects, that took place during 4, 6, 8 or 12 months.

3.5.3 Master's in Engineering Thesis and PhD Graduated Students at the LARCASE

Since 2003, Dr Botez has graduated the highest number of Master's and PhD students at ÉTS, thus she is ranked as the **first among all professors at ÉTS** regarding the number of Master's and PhD theses written under her supervision. The ÉTS website address that contains the names of these students and the titles of their Master's and PhD theses finalized under Dr Botez' supervision since 2003 is . It is also very important to mention that most of these students graduated under the unique supervision of Dr Botez.

Dr Botez has graduated **292 Bachelor's, 1 Master's certificate, 164 Master's (66 Thesis and 98 Project) students and 29 PhD students**.

A total of **66 students in Master's in Engineering** finalized their research theses under the supervision and co-supervision of Dr Botez in Aerospace Engineering after more than 2 years of work on various research projects at the LARCASE, while a total of **25 PhD students** finalized their theses under the supervision of Dr Botez, and 4 PhD students have finalized their theses under her co-supervision.

A number of **5 postdoctoral fellows** have done their internships at the LARCASE during 4 months, 6 months or 1 year. One research associate works continuously on the maintenance and functioning of the LARCASE equipments.

3.5.4 Work Places of Graduated Students at LARCASE (Please see the Appendix 1 for details)

Graduate students who have worked at LARCASE have been recruited by her industrial collaborators from Bombardier, CAE, Bell Helicopter Textron, CMC Electronics and other companies upon graduation, where they continue to work in research areas similar to those developed during their graduate studies.

Dr Lucian Grigorie, who finalized his PhD and postdoctoral internships in 2011 at the LARCASE, is Associate Professor at the Technical Military Academy Ferdinand II in Bucharest in Romania. Mr Roberto Felix Patron completed his PhD in 2014, and Mr Alejandro Murrieta Mendoza who completed his PhD in 2016. Both of them are Assistant Professors at the Hogeschool van Amsterdam in Netherlands. Mr Oliviu Șugar Gabor finalized his PhD in 2015, and Miss Andreea Koreanschi finalized her PhD in 2016. Both of them are Assistant Professors at the University of Salford in the United Kingdom. In 2021, Dr. Georges Ghazi finalized his PhD and he continues working at the LARCASE at ÉTS as Assistant Professor with Dr Botez. Dr. Hugo Yanez-Badillo, former PhD internship student at the LARCASE, has graduated in 2019 and he is Assistant Professor at Tecnológico de Estudios Superiores de Tianguistenco in Mexico, while Dr Jeremy Brossard is Assistant Professor at the FEMTO-ST Institute in Besançon in France.

Dr Grigorie and Dr Felix Patron are Invited Associate Professors at the LARCASE, while Dr Botez was Invited Associate Professor at the Craiova University in Romania.

Dr Botez has been member or president of more than 60 committees at ÉTS, Ecole Polytechnique de Montreal, McGill and Concordia universities in Montreal, and at Ryerson University in Toronto for the graduation of PhD students working under the supervision of other professors. She has also been the external member of various international PhD committees in Australia, France, Italy and India. The students' names can be easily visualized on the website of the LARCASE Team at .

4. SIGNIFICANT RESEARCH CONTRIBUTIONS AS PROJECT LEADER AT ÉTS

Since the beginning of her career, Dr. Botez has made various research contributions in the areas of aircraft design, modeling and simulation at both theoretical and practical levels. She has demonstrated her experience in various research areas, such as: (i) advanced flight dynamics and control methodologies and (ii) active control technology and morphing applications for aircraft using aeroservoelasticity knowledge, iii) flight trajectories optimization for Flight Management Systems (FMS), and other related areas. These methodologies have been experimentally validated using both flight and wind tunnel tests. These types of research have been performed on flying vehicles, such as rotorcraft, aircraft, and unmanned aerial vehicles with the global aim of advancing Green Aircraft Technology.

Dr Botez, as project leader, has finalized several challenging and original research projects, based on her above-mentioned experience and expertise, in collaboration with renowned partners from internationally well-known aerospace major leaders. Dr Botez collaborates closely with teams working in aerospace companies, such as Bombardier Aviation, Bell Textron (previously: Bell Helicopter Textron), Canadian Aviation Electronics (CAE), CMC Electronics (in Canada), Thales Group (in Canada and France), Presagis (in the USA), Leonardo Aerospace (in Italy), Hydra Technologies (in Mexico).

Dr Botez works also closely with research institutes, such as the Institute for Aerospace Research - National Research Council IAR-NRC (in Canada), Italian Aerospace Research Centre CIRA (in Italy), National Institute for Aerospace Research "Elie Carafoli" INCAS (in Romania), National Aeronautics and Space Administration NASA (in the USA), academic partners from Polytechnique Montreal, École de technologie supérieure ÉTS, McGill, Concordia and Carleton universities (in Canada), in Europe with the University of Craiova and Academia Militara Tehnica "Ferdinand I" (in Romania), École d'ingénieurs ÉPF (previously: École polytechnique féminine) and Isae-ESTACA (École supérieure des techniques aéronautiques et de construction automobile) in France, University of Bologna and University of Naples Federico II (in Italy), and from Sao Paulo State University UNESP (in Brazil). Ruxandra and her team have also worked on several projects funded by the

North Atlantic Treaty Organization NATO that took place in collaboration with partners from many countries.

Most of Dr Botez' large-scale research aerospace projects were funded by industrial companies, as well as by provincial (Quebec) governmental agencies and major consortiums, such as: les Fonds de recherche du Québec, le Ministère de l'Économie et de l'Innovation, the Consortium of Research and Innovation in Aeronautics in Quebec (CRIAQ), le Regroupement pour le développement de l'avion plus écologique (SA2Ge), and by federal (Canadian) governmental agencies and consortiums, such as: the Natural Sciences and Engineering Research Council of Canada (NSERC), the Canada Foundation of Innovation (CFI), and the Green Aviation Research & Development Business Led Network of Centers of Excellence (GARDN BL-NCE).

The projects led and finalized by Dr Botez were **premier realizations**, and as such, they have opened up new research areas in the worldwide aerospace industry. A high degree of technology transfer has been undertaken between Dr. Botez and these companies, as they are now using novel methodologies and codes based on her contributions. These achievements have been published in well-known scientific journals, conference proceedings and books. These papers have been therefore presented also at international conferences, and are consulted by the aerospace communities (academia, companies and research institutes).

In the next sub-sections**,** we refer mainly to the **significant contributions** on various research projects led by Dr Botez; these contributions resulted in new methodologies and results, that were successfully published. **For each research contribution, the number of peer-reviewed journal papers, invited chapters books and conference proceeding papers are mentioned. The awards, as well as the excellent graded theses and presentations are also mentioned.**

4.1 Research Projects in collaboration with Bombardier Aviation in Canada and with NASA DFRC in the USA on AeroServoElastic Interactions Studies (1995-2012)

Dr. Botez worked at Bombardier Aviation in the specific area of aeroservoelasticity interactions as a Task Leader in the period 1995-1997 in the Loads and Dynamics Department, on the Active Control Technology (ACT) research project for Fly-by-Wire aircraft. The multidisciplinary team of this project was formed by different engineers working in the following departments: Flight Dynamics, Stability and Control, Systems Engineering, Loads and Dynamics. Her task was to analyze the aeroservoelastic interactions that could occur on a new Active Control Technology (ACT) aircraft, and this analysis could only be performed by an integration of the research methodologies and the results from these departments. Then, since 1998, Dr Botez has continued aeroservoelasticity research at ÉTS on various other projects.

Dr Botez worked with NASA Armstrong Flight Research Center (previously NASA Dryden Flight Research Center DFRC) laboratories on the following three projects on the *F/A-18* aircraft: *F/A-18 Systems Research Aircraft* (SRA), the *Aerostructures Test Wing* (ATW) and the *F/A-18 Active Aeroelastic Wing* (AAW), as well as on the *Aircraft Test Model* (*ATM*) presented in the STARS in-house NASA software. This international aeroservoelasticity research with NASA DFRC was funded at the academic level with a total budget of **521.000 CAD** by three governmental institutions: the NSERC, the Fonds de recherche du Quebec (previously: FQRNT), and the Ministère de l'économie et de l'innovation (previously: MDEIE). Dr Botez travelled twice to NASA to work with its teams on these research projects. The NASA team collaborators during 1998-2003 in the aeroservoelasticity area (structural group) were Mr Kajal Gupta, Mr Tim Doyle, Mr Ed Hahn, Mr Roger Truax and Mrs Can Bach. The collaborator from the aeroservoelasticity area (controls group) was Mr Marty Brenner.

Dr Botez also continued to work in collaboration with researchers from her former team at Bombardier Aviation on the CL-604 and CF-18 Canadian aircraft on the project called *Time domain*

aerodynamic force approximations for the CL-604 aircraft; this project was funded by Bombardier Aviation and the NSERC from 2004 to 2007 with the budget of **150.000 CAD.**

Dr. Botez's major contributions to the aeroservoelasticity research area have been focused mainly on the design, development and validation of novel methodologies and their algorithms for the conversion of aerodynamic forces from the frequency domain to the Laplace domain (section 4.1.1), on the interactions between the elastic modes of an aircraft and its rigid and control modes, open and closed loop aeroservoelasticity studies, active control systems – such as gust load alleviation studies (section 4.1.2), and on the aircraft modeling from flight flutter tests using artificial intelligence techniques (section 4.1.3).

The details of LARCASE projects can be found on its website .

4.1.1 Development and Validation of Novel Methodologies and Algorithms for the Conversion of Aerodynamic Forces from the Frequency Domain to the Laplace Domain – 42 Publications: 14 Journal Papers and 28 Conference Proceedings Papers

A high number of new methods were developed for converting the aerodynamic forces from the frequency domain to the time domain; their results expressed in terms of flutter speeds and frequencies, and execution speeds were compared and analyzed with those of the classical methods. Among these methods, it worth mentioning six of them in the following paragraphs.

The Corrected LS (CLS) and Corrected MS (CMS) methods were based on the classical Least Squares (LS) and Minimum State (MS) algorithms, respectively. The new Mixed method was based on a combination of these two methods. The fourth method was based on Padé approximations, while the fifth method used Chebyshev polynomials and their orthogonal properties. The sixth method used fuzzy clustering techniques.

These new methods were successfully applied on the F/A-18 aircraft, and on the Aircraft Test Model (ATM) from the STARS software in collaboration with NASA, and they were also applied in-house at Bombardier Aviation on the CL-604 and CF-18 aircraft; roll control using ailerons was also integrated in these studies for both CL-604 and CF-18 aircraft.

It is important to mention that Bombardier Aerospace has successfully used the methodologies and results obtained in this project to validate the new time-based methodologies for aeroservoelastic analysis developed by Dr Botez, using wind tunnel tests. The wind tunnel model consisted of a three-degrees-of-freedom wing with a computer-operated aileron.

The wind tunnel tests included frequency sweep, pulse, step and short sinusoidal excitations. The wind tunnel results were expressed in terms of flutter speeds, frequencies and time-based responses to aileron excitations, and they were successfully validated with numerical results.

4.1.2 Interactions between the Aircraft Elastic Modes, Rigid and Control Modes (4 Publications: 1 Journal Paper and 3 Conference Proceedings Papers), Open and Closed AeroServoElasticity Studies - 7 Publications: 4 Journal Papers and 3 Conference Proceedings Papers) and Gust Load Alleviation Studies (11 Publications: 5 Journal Papers and 6 Conference Proceedings Papers

The elastic, rigid and control modes aerodynamic forces and their corresponding stability and control derivatives for an F/A-18 aircraft were calculated and validated by two original methods (numerical and analytical) for a high number (90) of flight test conditions. Flying qualities for this aircraft were also calculated, and then the aeroservoelastic interactions between the rigid, control and elastic modes were analyzed.

Open and Closed Loop AeroServoElasticity Studies and Analyses were performed for the Aircraft Test Model (ATM) presented in the STARS software from NASA. In addition, Gust Load Alleviation systems, which are one specific type of active control systems, were studied for the B-52 aircraft using various modern control design methodologies.

Flutter suppression studies and analysis was done using Magnetorheological Dampers and a LMI-based Controller.

4.1.3 Modern Techniques based on Artificial Intelligence for Aircraft Model Identification and Validation based on Flight Flutter Tests – 13 Publications: 4 Journal Papers and 9 Conference Proceedings Papers

Flutter analysis and its validation through Flight Flutter Tests (FFTs) for the F/A-18 SRA is an important research area, in which a high level of interest has been shown by NASA, and is important evidently to other aircraft manufacturers as well. Dr. Botez worked on the aeroservoelastc identification and validation of the F/A-18 System Research Aircraft (SRA) model from FFTs data collected in the Active Aeroelastic Wing (AAW) Technology Program at NASA.

In this project, signals from FFTs corresponding to the excited sources were measured at NASA. The excitation inputs were given by differential and collective ailerons, differential and collective stabilizers, and by rudders. Two types of signals were used, that corresponded to the control and structural deflections time histories on the wings and trailing-edge flaps. The FFT data were collected for a high number of flight conditions expressed in terms of Mach numbers between 0.85 and 1.30, and altitudes between 5,000 and 25,000 ft.

The F/A-18 aircraft flutter model relating the control to the structural deflections was identified and validated from its input and output characteristics, using modern artificial techniques, such as Neural Network, Fuzzy Logic, Subspace, as well as a combination of Fuzzy Clustering and Shape Preserving techniques. Results revealed excellent fits between the estimated and measured signals, and correlation coefficients higher than 90%.

This type of research is helpful in the development of new flight flutter suppression techniques based on FFTs, with the aim of extending the aircraft flutter envelope and, in turn, its performance. The importance of this research for aircraft certification, as well as for passenger safety, is well known, since flutter is a dangerous phenomenon for an aircraft structure and must be avoided during flight.

Following the aeroservoelastic interactions experience and expertise gained by Dr Botez on these projects, she was invited as Speaker at the *Invited Sessions on Aircraft Aeroservoelastic Control, Modeling, Simulation and Optimization* at five American Institute of Aeronautics and Astronautics (AIAA) different conferences. These Invited Sessions were organized mainly by Mr Marty Brenner from NASA, the main collaborator of Dr Botez in aeroservoelasticity control area. A number of 6 papers were written in collaboration with Mr Marty Brenner. Dr Botez has also presented the achievements of her LARCASE team as Invited Speaker at the NASA Ames in 2016.

4.2 Research project in collaboration with Bell Textron, IAR-NRC and Polytechnique Montreal on the Design and Development of the highest-Level D FAA Certified Flight Simulator Model for the Bell-427 Helicopter, including its Flight and Ground Dynamics Modeling based only on Flight Tests (2003-2006) – 13 Publications: 4 Journal Papers and 9 Conference Proceedings Papers

Dr Botez was the academic leader of the **first and most generously funded first-round CRIAQ projects**, carried out from 2003 to 2006. The total funding was amounted to **1.460 mil. CAD,**

of which 882.000 CAD was obtained from Bell Textron and 578.000 CAD from CRIAQ. In this CRIAQ 3.4 project, the design and development of the highest-Level D FAA certified flight dynamics simulator model for the Bell-427 helicopter was realized and then validated using all its available flight test data, in collaboration with the Bell Textron, IAR-NRC and Polytechnique Montreal teams.

As part of the research described in this CRIAQ 3.4 project entitled *Development of a New Parameter Estimation Technology for a Global Helicopter Model*, Bell Textron transferred the data obtained from more than 1000 flight tests, collected for a large range of flight conditions, to Dr Botez' and IAR-NRC teams for the design and development of a Bell-427 flight dynamics simulator model. This simulator model was qualified to Level D, which is the highest fidelity benchmark for its flight dynamics certification by the FAA.

At the LARCASE, novel Proof-of-Match techniques were developed for the validation of the Bell-427 simulator model using flight test data. Modern non-linear algorithms based on *Fuzzy Logic* techniques were also used for Bell-427 model identification. The original complete ground dynamics simulation model of the Bell-427 was also designed and developed at the LARCASE based on new analytical physical formulations, and then successfully integrated into the global Bell-427 simulator model, after which it was verified and validated using flight tests. The prediction of the main tail rotor torque and engine parameter dynamics was realized using the *Subspace method*.

Therefore, the main outcomes of this research were the new methodologies and algorithms developed for the flight dynamics simulator model identification and validation, which led to significant reductions in the required number of flight tests, and thus in the cost and time required for new helicopter development. **This new approach made possible a nearly 60% reduction in the Bell-427 development cycle.** These new methodologies and codes have been directly applied at Bell Textron.

Excellent methodologies and results were obtained by Dr. Botez, as academic leader with her team, which led to award-winning student theses (one Master's and one PhD), and award-wining oral conference presentation mainly on the new techniques of the advanced Bell-427 simulator modelling.

4.3 Research project in collaboration with Thales in France and Canada, Bombardier Aviation, IAR-NRC and Polytechnique Montreal in Canada on Laminar Morphing Wing Research (2006-2009) – 56 Publications: 16 Journal Papers, 4 Invited Book Chapters and 36 Conference Proceedings Papers

From 2006 to 2009, Dr. Botez was the academic leader of the MultiDisciplinary Optimization CRIAQ MDO 7.1 project, called *Laminar Morphing Wing Research*, funded by Bombardier Aviation, Thales, IAR-NRC, CRIAQ and NSERC. This *first Morphing Wing project in Canada* involved the continuous collaboration of six active partners (three academic, two industrial and one research institute), received the highest second-round CRIAQ research grant, totalizing an amount of **1.545 mil. CAD,** of which 630.000 CAD was obtained from Bombardier Aerospace and Thales, 600.000 CAD from NSERC and 315.000 CAD from CRIAQ.

Due to the multidisciplinary nature of this project, a synergy was created between the LARCASE team led by Dr Botez, and two other academic laboratory teams from the *Laboratoire sur les alliages à mémoire et systèmes intelligents* (LAMSI) at the ÉTS, and the *Bombardier Chair* at the Polytechnique Montreal. These three academic teams have collaborated, as mentioned above, with the Institute of Aerospace Research-National Research Council (IAR-NRC) team, as well as with the industrial partners from both aerospace companies, Bombardier Aviation and Thales Group (abbreviated by Thales).

In this large-scale CRIAQ 7.1 project, research on the new design of a morphing wing controller for the laminar flow improvement, resulting in reduced drag and fuel consumption, was extremely useful for green aircraft technologies studies, and it was thus in line with European and North American policies. Dr. Botez investigated this area as project leader by designing, developing and manufacturing, in collaboration with the other partners, a research wing box equipped with a flexible morphing upper skin. Smart Material Actuators (SMAs) were installed on this wing upper surface, so that they could change its shape for various flight conditions. Piezo-electric sensors were installed on the morphing skin to measure the flow pressures and the transition region from laminar to turbulent flow. Novel controller methodologies were developed with the aim to change the wing airfoil shape by relating pressure sensors to SMAs, in order to improve its aerodynamic performance.

These new types of controllers have been designed, developed and simulated using various modern techniques: Modified Proportional Integral Derivative PID, Fuzzy Logic and Real-Time Optimization, Adaptive Neuro-Fuzzy Interference Systems ANFIS, Hybrid Fuzzy Proportional Integral Derivative Logic and On-Off Combination, On-Off Combination and Proportional-Integral and a Mixed Optimization method which consisted of a combination of Gradient Climbing or Hill Climbing methods with Annealing Simulation method; the laminar flow region was extended by up to **40%** of the wing airfoil chord for all 35 wind tunnel test conditions, expressed in terms of Mach numbers, Reynolds numbers and angles of attack, leading to a reduction in wing drag and hence associated fuel consumption. This new control methodology was validated using Wind Tunnel Tests at IAR-NRC.

Dr. Botez with her team has made major significant contributions related to research in this project, that were related mainly to new open and closed loop controller methodologies design, development and their experimental validation during bench and wind tunnel tests on the morphing wing equipped with a flexible skin, kulite pressure sensors and SMAs, such as:

- In-house Software for Laminar Flow Transition Detection
- Open and Closed Loop Controller Techniques
- Optical Sensors Technologies Studies for Laminar to Turbulent Flow Transition
- Aeroelasticity Studies for a Morphing Wing to determine the flutter conditions, that needed to be avoided during wind tunnel tests
- Infrared Studies Analysis and Validation for Flow Transition Detection using Kulite Pressure Sensors

Dr. Botez was invited at the end of this project, due to its multidisciplinary aspects, to present the methodologies and results obtained in this project during a seminar organised by, and at Bombardier on January 20 in 2010 for engineers working in six different departments: Flight Sciences, Stability and Control, Advanced Design, Loads, Dynamics and Advanced Aerodynamics.

The success of this project was observed also in its continuation, in collaboration with the same Canadian partners, under the leadership of Dr Botez, on an international scale, with Italian partners on the CRIAQ MDO 505 project, described in the next section 4.4.

The third CRIAQ award has been won by Dr Botez and her team for the CRIAQ MDO 7.1 project realizations in 2012 at the CRIAQ competition of finalized projects. Two other awards have been won in 2012 by two Master's students Francois Michaud and Robin Calestreme at the competitions organized by the Students Aerospace Forum (SAF), and at the ETS Discovery Day.

4.4 Research international project in collaboration with Alenia Aeronautica, University of Naples Federico II and CIRA in Italy, with Thales in France and Canada, Bombardier Aviation, IAR-NRC and Polytechnique Montreal on Morphing Wing-Tip Research on a Bombardier Regional Aircraft in Canada (2012-2016) - 41 Publications: 16 Journal Papers and 25 Conference Proceedings Papers

Dr Botez was the academic leader of the international large-scale CRIAQ MDO-505 project, called *Morphing Architectures and Related Technologies for Wing Efficiency Improvement,* that took place between Canadian and Italian partners. This project was a continuation of the above mentioned CRIAQ MDO 7.1 project, and it had a higher TRL, as its aim was to modify, optimize and thus to improve the aerodynamic performances of the wing tip of an existing Bombardier type aircraft; therefore, the Canadian team partners were the same partners as those who participated in the previous mentioned CRIAQ MDO 7.1 project: Bombardier Aviation, Thales, Polytechnique Montreal and IAR-NRC, while the Italian partners were from Alenia Aeronautica, CIRA, and University of Naples Federico II. This project was funded by Bombardier Aviation, Thales, IAR-NRC NSERC, CRIAQ in Canada, and by its Italian partners. The total cost of this research international project was of approximately **3 mil. CAD.**

In this project, the morphing wing and aileron composing the morphing wing-tip, were equipped with electrical in-house actuators and pressure sensors; this morphing wing-tip and its system was designed, developed and manufactured. The morphing wing and the rigid aileron were developed and manufactured by the Canadian team, while the morphing aileron was developed and manufactured by the Italian team. The integration of the wing-tip was done under the leadership of Dr Botez. After the finalization of the morphing wing-tip manufacturing, Wind Tunnel Tests took place at the IAR-NRC with the aim to validate experimentally the numerical results obtained in aerodynamics, structure and controls disciplines.

The significant contributions of Dr Botez and her team in this international project were the:

- In-house software for Laminar Flow Transition Detection in 2D and 3D
- Aeroelastic Interactions (Flutter) Studies
- Aerodynamics Studies in 2D and 3D for the Morphing Wing-Tip
- Aero-Structural Optimization Studies and Analysis with the aim to find the Actuators Positions
- Open and Closed Loop Controller Techniques for Morphing Wing and Morphing Aileron (Morphing Wing-Tip) equipped with Pressure Kulite Sensors and Electrical Actuators
- Infrared Studies Analysis and Validation for Transition Detection using Kulite Pressure Sensors installed on Composite Materials Morphing Wing-Tip (Wing and Aileron) in the IAR-NRC Subsonic Wind Tunnel

For more than 100 wind tunnel test conditions, which were expressed in terms of Mach and Reynolds numbers for several angles of attack and angles of deflection of the airfoil, the laminar flow region on the deformable wing was extended by a maximum of **9%** of the chord, and a reduction in aerodynamic drag of up to 9% was also achieved for the Morphing Wing Tip.

The LARCASE team continues to work on various aspects of this project within the Canada Research Chair Program, mainly by use of the CRJ-700 regional Bombardier Aircraft geometrical and Level D flight test data available on its VRESIM.

Two important awards were obtained by Dr Botez and her CRIAQ MDO-505 team: *Premio Venezia* was given by the Italian Chamber of Commerce in 2015, and the *Second-place Award* that was obtained in 2014 following the CRIAQ Forum Competition.

The scientific paper written on the CRIAQ MOD-505 project achievements presented by Dr Botez at the Greener Aviation Clean Sky Breakthroughs and Worldwide Status Conference in Brussels has been selected on the *Short List of Papers for Award Selection;* this short list contained the titles of the best 14 papers presented at this conference in 2014.

Two Master's students (M. Guezguez and Jean Baptiste Vincent), and the PhD student Miss Andreea Koreanschi of the CRIAQ MDO-505 project team have received the '*Excellence*' grades from the committees of their theses in 2015 and 2016. Miss Andreea Koreanschi has received the '*Excellence PhD Scholarship*' Award following the CRIAQ scholarship competition in 2016. The *Young Scientist Poster Award* was received by the CRIAQ MDO 505 project team at the Posters Competition organized by the 40th American Romanian Academy of Arts and Sciences ARA Congress Committee in 2016.

4.5 Research Projects in collaboration with NATO on the Aircraft Flight Dynamics and Stability Analysis based on Geometrical Data – New In-House Code Development called 'FDerivatives' – Application on the X-31, High Incidence Research Model HIRM, and research on Morphing Vehicles (2007-2012) – 14 Publications: 4 Journal Papers and 10 Conference Proceedings Papers

Dr Botez was the **Canadian officially appointed technical team member** of approximately various NATO Working Groups of Applied Vehicle Technologies AVTs during 2007-2012. Among these groups, the most important contributions were done in the **AVT-156, AVT-161, and AVT-168 and AVT-189.** Dr Botez participated at various meetings of these working groups in order to contribute to their research by use of their numerical and experimental available data.

In the *NATO Working Group of the Applied Vehicle Technology AVT-161* and *AVT-189* on the *Assessment of Stability and Control Prediction Methods for NATO Air & Sea Vehicles*, Dr. Botez was responsible for performing the stability and control derivatives calculations for the X-31 fighter aircraft based on its geometrical data, and their validation with wind tunnel test data. Dr Botez was the officially appointed technical team member for Canada on the NATO AVT-161 team, as seen in the RTO Scientific Achievement Award Team Nomination Form. This form was produced in Spring 2012, and the name of Dr Botez and the other 46 researchers' names from 14 countries are given on pages 4-6. In this form, the following paragraph is cited which clearly explains the contributions of the researchers

"*Many scientists and researchers (46 total) from so many NATO nations (14) gathered together to produce such a comprehensive package of both experimental and analytical data, for both air and sea domain vehicles. These data sets will have a great impact with regard to the development of future NATO air and sea platforms, thus, directly and indirectly supporting warfighters needs. In the four years that AVT-161 existed, it is estimated that the participating nations spent over €10 million on building and testing both wind tunnel and water tank models, to compile a database of experimental results, while running large computer models to produce analytical data comparisons. In addition to producing an enormous database of test and analytical results which will be used for years to come, AVT-161 spawned an unprecedented number of documented results. The work of this Task Group has produced one PhD dissertation, and several M.S.E. theses, plus 13 journal articles and 33 conference papers. There were also a significant number of spin-off activities, including 2 new Task Groups, one Specialist Meeting, and one Exploratory Team to further the work. The organizational methods alone which were developed by AVT-161 to achieve its goals have set a new benchmark for future Task Groups to build upon. It is abundantly clear that AVT-161 is a shining example of the mission of RTO to conduct cooperative research and information exchange and also exemplifies the mission of AVT improve the performance, affordability and safety of vehicles through the 4 advancements of technology. AVT-161 has produced a truly significant scientific*

contribution to the NATO knowledge base, with a direct measurable impact on defense vehicles, with an unprecedented level of international collaboration".

For this work, Dr Botez with her LARCASE team have developed a new code for the estimation of aircraft flight stability based only on its aircraft geometrical data, that was called *FDerivatives*; this new code was based on the USA Datcom documentation, but it considered LARCASE new aerodynamics in-house developed methodologies, and therefore it contains over 200 text files, 95 Matlab functions and 10,000 lines. This code has a very fast execution time, and is thus useful in preliminary aircraft design when aeronautical companies need to minimize their decision time on aircraft geometry. Another advantage is a reduction in the number of flight tests required for the prototypes' validation, along with their associated costs. The code could be generalized for different types of aircraft for which geometrical data would be available; therefore, Dr Botez and her team applied succesfully their in-house new *FDerivatives* code, as well as the *Weight Functions Method* for the X-31 fighter aircraft stability analyses.

The wind tunnel operation and acquisition wind tunnel tests data costs in this project were of the order of **10 mill. EUR**. The prestigious NATO Award called the "**RTO Scientific Achievement Award 2012**" has been won by the NATO AVT-161 team, including Dr Botez.

Dr Botez was also member of the Technical Committee for the *AVT-168 NATO Symposium on Morphing Vehicles* that took place at Evola in Portugal in 2009. At this symposium, she was the Session Chair for the *Panel on Morphing Vehicles*. Dr Botez also presented the methodologies and results obtained in the CRIAQ 7.1 project in 2 conference proceedings papers.

Dr Botez was also invited at the *AVT-156 Advanced Aeroelasticity NATO meeting* that took place in Loen, Norway in 2008, where she presented one conference proceedings paper on the rigid, elastic and control aeroservoelasticity studies on the F/A-18 SRA aircraft, realized in collaboration with NASA.

Other methodologies and results were presented in one conference proceedings paper at the *Applied Vehicle Technology Panel Specialists Meeting AVT-189 on the Assessment of Stability and Control Prediction Methods for NATO Air and Sea Vehicles* in Hampshire, UK.

4.6 Four major research projects in collaboration with CMC Electronics-Esterline on Green Aircraft Technology funded by GARDN and SA2GE during different periods of time (2009-2013; 2013-2017; 2016-2018; 2018-2019)

One of the Canadian Business-Led Network of Centres of Excellence (BL-NCE), called the *Green Aviation Research and Development Network* (*GARDN*), was founded in 2009 by researchers from three aerospace companies: Bombardier Aerospace, Pratt & Whitney Canada and CMC Electronics and eight universities. The Network's mission concerned: i) the design of new technologies for green aircraft, ii) the fuel consumption, thus the emissions and noise reduction, and iii) the improvement of aircraft life cycles, engines and controls.

GARDN had an initial budget of approximately 23 million $ over its first round of four-years period 2009-2013 for nine research projects. Dr. Botez was the academic leader for one of these nine projects funded by GARDN in its first round, and she continued working with CMC Electronics as academic leader in two other projects in the GARDN second and third round.

The significant contributions of Dr Botez and her LARCASE team are described in the next 2 sub-sections for these projects. All these projects were funded during more than 10 years with a total budget of **3.5 million CAD** by the *Green Aviation Research and Development Network* (*GARDN*) - Business-Led Network of Centres of Excellence (BL-NCE).

4.6.1 *Optimized Descents and Cruise* project (2009-2013) – 21 Publications: 8 Journal Papers and 13 Conference Proceedings Papers

Dr Botez worked as academic leader in collaboration with CMC Electronics, which is well-known internationally in the avionics systems field on the project called CMC-1: *Optimized Descents and Cruise*. The description of this project is found on the website of the GARDN I Projects.

The total budget of this 4 years project that took place between 2009 and 2013 was of **1.4 million CAD.** In this first round of GARDN funded projects, **a *University - based Centre of Excellence on Flight Path Optimization*** was created at the LARCASE, at ÉTS, as proposed by CMC Electronics.

In this project, new methodologies for aircraft trajectory optimizations were designed, developed, implemented and tested for aircraft fuel cost reduction using Flight Management Systems (FMS) new software. Flight Tests were conducted on the FMS for the *Airbus A-300, Russian Regional Jet RRJ, and Lockheed L-1011.* An impressive number of original algorithms were developed as part of this project and applied at CMC Electronics on their FMS with the aim of the best cruise altitude selection by the pilots, which would require minimal cost. The vertical and horizontal trajectories of the aircraft have been optimized within the FMS, taking into account the required arrival time, wind and other weather conditions.

In one of these algorithms, the optimum cruise altitude was determined for flying an aircraft at constant speed and altitude on a given flight path segment. The optimisation criterion corresponded to the minimisation of the total costs, and hence fuel consumption for the cruise flight segment. The algorithm used a new method of calculating fuel consumption, for cruise segments, based on aircraft performance data. Three aircraft models were considered, one whose cruise model used the centre of gravity position and two that have not used the centre of gravity position. The performance of the algorithm was evaluated on the three aircraft models already mentioned - Airbus A310, Sukhoi RRJ and Lockheed L1011. Validation data were generated based on the information available on a CMC Electronics FMS platform, which used identical aircraft models and performance data, for identical flight conditions.

In order to reduce aircraft fuel consumption, another new method for optimizing flight paths has been developed for its implementation in commercial FMS. The aircraft model was obtained from a flight performance database that included experimental flight data. Optimised trajectories for three commercial aircraft were analysed and developed. To obtain the optimal flight trajectory that reduces the overall cost of flight, vertical and lateral profiles (VNAV and LNAV) were studied and analysed to find the speeds, flight altitudes and horizontal trajectories of the aircraft that could reduce the overall fuel consumption. A dynamic weather model was implemented to improve the accuracy of the algorithm in real flight. This weather model calculated wind speeds and directions, as well as outside air temperature from a publicly available weather database. In order to reduce the computation time, different time optimization algorithms, such as the Golden Section search method and various genetic algorithms were implemented. The optimization algorithm calculated the aircraft trajectory by taking into account the departure and arrival airport coordinates, aircraft parameters, in-flight constraints such as speeds, altitudes and waypoints on the flight path. Flight time, fuel consumption and therefore the overall cost of the entire flight have been reduced by up to **10%.**

CMC Electronics has mentioned in one of their GARDN Annual Report 2015-2016 that "The success of this project has helped secure a new collaboration between Canadian company CMC Electronics and Ukrainian company Antonov".

The Master's student Jocelyn Gagné and the PhD student Roberto Salvador Felix Patron have received the '*Excellence*' grades from the committees of their theses in 2013, and in 2014. Mr Roberto Felix Salvador has received twice the '*Best Oral Presentation Award*' at the International Symposium on Industrial Electronics in 2012, and in 2013 for research performed on this project. Roberto also received the *Third-place Award* at the ÉTS Discovery Day posters competition in 2014, while the Master's student Souleymane Sidibe received the *Third-place Award* at the ÉTS Discovery Day posters competition in 2012. Mr Bogdan Dancila, Master's student has received two (2) *Excellence Scholarships* from Esterline-CMC Electronics in 2011 and 2012, while Mr Radu Dancila, Master's student has received the *Excellence Scholarship* from GARDN.

4.6.2 *Flight Management Performance Optimization II* project (2014-2018) – 54 Publications: 21 Journal Papers, 1 Invited Book Chapter and 32 Conference Proceeding Papers

In the second round of GARDN projects, a second project called CMC 21: *Flight Management Performance Optimization II* took place between 2014 and 2018 under the academic leadership of Dr Botez, and in collaboration with CMC Electronics. The description of this project is on the website of the GARDN II Projects.

In this project, funded with a total budget of **1.5 million CAD**, the vertical and horizontal paths of the aircraft were optimized within the FMS by taking into account the required time of arrival, the wind grids and meteorological conditions.

The RAFS for the CCX has been used at the LARCASE with the aim to design a highly efficient aero-propulsive model from a minimum available flight test data for the climb, cruise and descent (including acceleration and deceleration) regimes. The maximum modeling error was found to be, accordingly to the FAA criteria, smaller than 5%; the aerodynamic coefficients or engine data were not used, that was the novelty of the research. Excellent results (fitting between the model and flight test data of 98%-100%) were obtained using the RAFS for the CCX. This aero-propulsive model could be generalized for all flight conditions, and further improved for other types of business aircraft. The main motivation of this type of research was the development of an aero-propulsive efficient model (for overall greenhouse and fuel emissions reduction) based on a minimum available amount of data, such as the ones provided by the Aircraft Flight Model (or equivalent).

This type of research, oriented towards a highly efficient aero-propulsive aircraft modeling, is extremely useful for aircraft manufacturers, such as Bombardier, Boeing, Airbus, Cessna, as it conducts to the reduction of the number of flight tests (and thus, the costs) required for their prototype validation.

This research is also extremely helpful to sub-contractors in avionics systems (FMS, GPS, etc), such as CMC Electronics and to aircraft modeling and simulation companies, such as CAE Inc. and Thales, as the models developed at the LARCASE are based on a minimum available data required from aircraft manufacturers; it is known that these companies need to acquire flight test data to complete their database information in order to improve their in-house aircraft or avionics systems models, which is very expensive for them. As the aero-propulsive models developed by LARCASE need a minimum amount of data, then, these companies could develop faster and better their models based on a minimum of information and flight tests, which could conduct to fewer flight tests needed, that would result in fuel consumption reduction, therefore, in important economic benefits.

In 2016, different students from LARCASE received awards for their posters presented on these research achievements at the 40th American Romanian Academy of Arts and Sciences ARA Congress. Miss Alina Turculet (Master's student) and Mr Georges Ghazi (PhD student) have received the *1st Poster Award in Aircraft Modeling*, Mr Charles Romain (Internship student) and Mr

Alejandro Murrieta Mendoza (PhD student) received the *Poster Award in Navigation Modeling*, while Mr Radu Dancila (PhD student) and Miss Loredana Dugulean (Master's student) received the *Young Scientist Poster Award in Navigation*. The Internship student Lars Rudolf Hetfi (Internship student) has obtained the *Best Poster Award* at ETS during the Posters Competition in the Automated Production Department in 2016.

This project was renewed in the GARDN II 3rd round of projects in 2017 until 2019 on a 2 years period (with a budget of **150.000 CAD**), and then, in the SA2GE projects until 2020 (with a budget of **100.000 CAD**).

4.7 Canada Research Chair in Technologies for Aircraft Modeling and Simulation Technologies (2011-2025)

Dr Botez is also the Canada Research Chair **(CRC)** Tier 1 Holder in Aircraft Modeling and Simulation Technologies, Canada Research Chairs. The budget of this Chair during 14 years is **2.8 mil. CAD** and is used to remunerate the LARCASE team, consisting mainly by students working under the supervision of Dr Botez, as well as by the research associate Mr Oscar Carranza, in charge with the maintenance of LARCASE equipments.

This Chair represents the prestigious Canadian and international recognition of Dr. Botez's research. For this reason, the details of the program to establish these Canadian Chairs is mentioned in the next paragraph.

"In 2000, the Government of Canada created a permanent program to establish 2,285 Canadian Research Chairs at eligible university institutions across the country. Chairholders aim to achieve research excellence in the engineering and natural sciences, medical sciences, humanities and social sciences. They enhance the depth of knowledge and quality of life of Canadians, strengthen Canada's international competitiveness, and contribute to the training of the next generation of highly qualified people by supervising students, teaching and coordinating the work of other researchers. This program, which has been named the Canada Research Chairs Program (CRCP), is administered by the Tri-agency Institutional Programs Secretariat of the Social Sciences and Humanities Research Council (SSHRC), the Natural Sciences and Engineering Research Council (NSERC) and the Canadian Institutes of Health Research (CIHR)".

The Chair's activities started on 1st of January 2011, and revolved around two main research axes applied for aircraft and unmanned aerial systems modeling and simulation: (i) flight dynamics and control; and (ii) active control technologies for morphing systems. In the first axis, new modeling and simulation methodologies for aircraft flight dynamics and control are developed. Using flight test data, non-linear optimization algorithms are developed to identify and validate aircraft model. In the second axis, the LARCASE team is using geometric data to analyze aircraft stability. The LARCASE infrastructure consisting of the RAFS (for the CCX business aircraft), the VRESIM (for the CRJ-700 commercial aircraft), the UAS-S4 and S45 and the subsonic wind tunnel, and that was explained previously in details, is used in both axes of the Chair.

The LARCASE equipments and the research performed on them are mentioned in one **journal paper** written by Dr Botez, and published in the ***Aerospace Lab*** journal following the invitation from Dr Cedric Liauzun from ONERA in France.

The research performed using the LARCASE infrastructure is detailed in the following sub-sections.

4.7.1 Research projects performed in the Price-Païdoussis Subsonic Wind Tunnel on Morphing Wings, Calibration Technologies, Ground Surveillance Systems and Flapping Wings (since 2010) – 28 Publications: 13 Journal Papers and 15 Conference Proceedings Papers

The Price-Païdoussis Subsonic Wind Tunnel is used for analyzing and testing of aerodynamics, structure and controls concepts of reduced scale morphing wings and their components on the ATR-42 aircraft, UAS-S4 and UAS-S45; Morphing Leading Edge (MLE), Morphing Trailing Edge (MTE) and Morphing Camber System (MCS) concepts were studied, analyzed and experimentally tested.

New calibration technologies using artificial intelligence, such as *Neural Network* and *Extended Great Deluge* were also performed. The SAE International organization has found very interesting **one journal paper,** published in the *SAE International Journal of Aerospace* in 2014 on new wind tunnel calibration methodologies by the LARCASE team; therefore, the SAE International organization had scientifically disseminated this paper in the "Aerospace and Defense Technology, The Engineers Guide to Design and Manufacturing Advances" at page 35.

Dr Botez performed, as academic project leader, together with her LARCASE team, aerodynamic studies on the FLIR Systems radars in 2016 in order to test their aerodynamic resistance to the winds. This research project called *Wind Tunnel Testing of Research Radar Equipment at High Speeds – Numerical versus Experimental Validation* was funded by the NSERC in the frame of the ENGAGE program with a budget of **25.000 CAD**. Two FLIR radars R20SS and R6 were successfully experimentally tested in the Price-Païdoussis subsonic blow down wind tunnel at the LARCASE under the leadership of Dr Botez. For this project, a third test section was designed and fabricated for the LARCASE wind tunnel. The numerical aerodynamics results were validated with experimental wind tunnel tests data.

The Young Scientist Award for Wind Tunnel Research Poster has been won by the LARCASE team at the 40th American Romanian Academy for Arts and Sciences. This team, led by Dr Botez, was composed by Mr Oliviu Șugar Gabor and Mr Manuel Salinas Flores (PhD students), Mr Cyril Ledent and Mr Robin Lacroix (Internship students), and Mr Oscar Carranza (Research Associate).

Nonlinear adaptive fuzzy control methodologies were used to analyze the chaotic uncertainties of flapping wings. The wind tunnel was used also to validate experimentally the flapping wings dynamics in collaboration with Professor Païdoussis. The PhD Prize has been won for a **conference article**, that was presented by the McGill and ÉTS PhD students at the *Second International Symposium on Flutter and its Application in Paris*, France in 2020, who worked under the supervision of both professors Dr. Botez and Dr. Païdoussis**.**

Another interesting research tested in the wind tunnel was performed in collaboration with professor Rachid Aissaoui from the LIO (*Laboratoire de recherche en imagérie et orthopédie*) at ÉTS in the biomedical field by studying the effects of the winds on the human walking.

4.7.2 Research projects in collaboration with CAE Inc. on the Hawker 800 XP aircraft, High Incidence Research Aircraft Model HIRM, on the Research Aircraft Flight Simulator RAFS for the Cessna Citation X (CCX) Business Aircraft and on the Virtual Research Simulator VRESIM for the CRJ-700 – 82 Publications: 25 Journal papers and 57 Conference Proceedings Papers

Dr. Botez worked as leader of a first project with CAE Inc. in 1998, called *Matrix$_x$ Code Applications in CAE Operations.* In this project, funded by CAE with **20.000 CAD**, the Matrix$_x$ code application at CAE was evaluated and analyzed. Following this evaluation, CAE has decided to apply

this code in flight dynamics analysis. Today, the Matlab code is more extensively used than the Matrix$_x$ code.

Hawker 800 XP and the HIRM

Between 2003 and 2006, Dr Botez has worked as participant on a second research project called *Aircraft Stability Analysis based on Geometrical Data* in collaboration with CAE on the Hawker 800 XP business aircraft stability analysis based only on its geometrical data. In this project, funded by CRIAQ and CAE with the total amount of **1.2 mil. CAD**, new methodologies were developed for the stability analysis of the Hawker 800 XP business aircraft using the *FDerivatives* new code mentioned in the above section 4.5. The *Weight Functions* method was successfully applied for the stability of this aircraft, as well as for the stability of the *High Incidence Research Aircraft Model HIRM* aircraft.

In 2012, the Presagis award for the best simulation model was won by the team led by Dr Botez from the LARCASE for the modelling and simulation of the Hawker 800 XP business aircraft.

CCX

New methodologies for aero-propulsive modeling and simulation were developed and experimentally validated with flight test data for the CCX using the RAFS. Model identification of the CCX aircraft was performed at the LARCASE based on data published in the Aircraft Flight Manual AFM (or equivalent). The aerodynamic and propulsion performance as well as the reliable and accurate model of the CCX aircraft were obtained using two new methodologies. Performance monitoring and automatic model updating of the CCX aircraft have also been performed. New algorithms were developed for predicting the performance and flight trajectories of the CCX aircraft, which took into account wind effects and piloting techniques in various flight phases. New modern robust control methodologies for the CCX aircraft were also developed and validated using also artificial intelligence techniques.

The "Morphing Winglet" and "Morphing Horizontal Tail" concepts were studied and analyzed to improve the aerodynamic performance of the CCX aircraft. The horizontal stabilizer ("Morphing Horizontal Tail") of the CCX aircraft was able, through the use of a new optimization methodology, to change its shape and balance the aircraft itself in order to reduce drag and therefore fuel consumption during cruise flight. An average fuel consumption reduction of 4% was achieved for the considered cruise flight cases.

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consumption during cruise flight. An average fuel consumption reduction of 4% was achieved for the considered cruise flight cases.

CRJ-700

New methodologies for the CRJ-700 regional commercial aircraft and its engine were developed in the areas of aero-propulsive modeling and simulation based on flight tests and geometric data. New control methodologies were developed and validated using the VRESIM simulator. The "Morphing Winglet" aspects of this regional aircraft were studied and analysed.

Modelling the aerodynamic characteristics of an aircraft under stall conditions remains a very important study for engineers and researchers. A new methodology for modeling aerodynamic coefficients and predicting flight dynamics of the CRJ-700 aircraft under static and dynamic stall conditions, including linear and nonlinear phases (as well as the hysteresis cycle) has been developed based on neural networks. The collected data was then used to create a database of aerodynamic coefficients for the entire flight envelope of the aircraft. The developed models were then integrated into a Matlab/Simulink simulated CRJ-700 aircraft platform to validate its flight dynamics. The flight parameters predicted by the platform were compared with those obtained by the VRESIM simulator. The criteria used to validate the model were defined by the FAA, which specified the tolerances required for estimating the angles of attack, pitch angles, true airspeeds, and altitudes for both dynamic and static stall phases. All validation flight tests gave excellent results with a 100% success rate, i.e. the simulation platform results were identical to those collected by the VRESIM.

The CRJ-700 aircraft engine performance model was identified from flight test data for a wide range of operating conditions using neural network methods. The data collected for the take-off, climb, cruise and descent phases were then used to create a database for the training process. The validation of the methodology was performed by comparing the prediction model with a set of flight data collected using the VRESIM. The results showed that the model was able to predict the engine performance as a function of RPM, thrust and fuel flow with excellent accuracy.

In addition, the optimization aspects of the "Morphing Winglet" of this regional aircraft were studied and analyzed. This wing model for the CRJ-700 demonstrated its strength at maximum aerodynamic loads, as well as at load factors between -2G and 7G, while the maximum lift to drag ratio was increased by 4%.

4.7.3 Research projects in collaboration with Hydra Technologies in Mexico, Tristar Multicopters and Aliptera in Canada, and with US Naval Research Laboratory on Unmanned Aerial Systems, Quadrorotors and other Drones VTOL and Unmanned Underwater Vehicle UUV Novel Design, Optimization, Modeling, Simulation and Testing - Participation in the CREATE-UTILI Program (since 2011) – 59 Publications: 24 Journal Papers and 35 Conference Proceedings Papers

Dr. Botez's main contributions in these projects have been and continue to be obtained on the UAS-S4 and UAS-S45 unmanned aerial systems in collaboration with Hydra Technologies of Mexico, in both axes of the **CRC** on the i) design and development of their morphing components and systems, as well as on the ii) design of their flight simulators based on their flight and geometric test data.

The advantage of having the geometric data of the UAS-S45 Balam and UAS-S4 from Hydra Technologies, it provides the opportunity for Dr Botez and her team to contribute to various multidisciplinary research areas for UAVs, such as design, modelling and simulation of morphing

systems, active control technologies, etc. Wind tunnel and flight tests are used to experimentally validate the numerical research performed on both UASs.

Research on UAS-S4 and UAS-S45 morphing wing systems involves MultiDisciplinary Optimization (MDO) knowledge in the areas of **aerodynamics, structure and control.** Original methodologies have been developed for the aerodynamic and structural analysis of unconventional designs of both UAS-S4 and UAS-S45. Therefore, a new nonlinear Vortex Lattice method in aerodynamics has been developed at the LARCASE to optimize the UAS-S4 wing model at large angles of attack, close to dynamic loss-of-balance conditions.

In parallel, structural studies, including moment of inertia computations for the S4 and S45 UASs, were performed and the modelling of these systems was mainly based on semi-empirical methodologies. Various other aerodynamic optimisation methodologies were developed to improve their aerodynamic performance. For various new concepts of optimised and morphing configurations of these systems and different flight conditions, the following maximum performances were obtained by comparing them with the initial ones: drag reduction by 4.5%, delay of boundary layer separation by 15% of the wing airfoil chord, stall angle delay by 3^0, increase of lift to drag ratio, expressed by $CL^{3/2}/CD$ ratio, by 10.25%, and increase of lift by 26% and maximum lift by 9.6%. It was concluded that morphing UAS technologies are highly beneficial.

A flight dynamics simulator was also designed and developed by Dr. Botez' team for both UAS-S4 and UAS-S45. This modelling is extremely useful for the Mexican company Hydra Technologies as it could be used for pilot training and for improvement of their modeling, simulation and control methodologies. The flight simulator technology research methodologies and results could also be used by other UAV designers and manufacturers.

Dr Botez also works with other collaborators from various universities and companies in the UAV field thanks to his expertise gained in collaboration with Hydra Tehnologies. She is a member of the research program team called *NSERC CREATE - Uninhabited aircraft systems Training, Innovation and Leadership Initiative UTILI* (2019-2025).

This 6-year program (2019-2025) was funded with a budget of **2.1 mil. CAD** and is led by Dr. Jeremy Laliberte from Carleton University in Ottawa. In this program, under the direction of Dr. Botez, students complete 2-month internships per year in companies specializing in UAVs. So far, they have completed their internships at Tristar Multicopters and ING Robotics Aviation Inc.

Dr Botez worked with Tristar Multicopters in the PARI-NRC program. This company is developing a 3-rotor based drone, and Dr. Botez conducted an evaluation of this drone with respect to its testing and certification requirements. The numerical and analytical design concepts for this drone have been experimentally validated. In addition, modeling of the electric motor of the 3-rotor based drone was performed using Artificial Neural Network techniques. Another research on Quadrotor UAV was carried out to analyse and control its vibrations in collaboration with Dr Douglas Bueno from the University of Sao Paolo in Brazil. Aerodynamic studies were also carried out for the Aliptera VTOL concept aircraft designed and manufactured by Aliptera (Aliptera - About Page). Research was also carried out on the design of an Unmanned Underwater Vehicle (UUV) in collaboration with Dr Ioana Triandaf from the US Naval Research Laboratory in the USA.

One conference proceedings paper was selected by the Electric Aircraft Technologies Symposium Technical Program Committee for its presentation as a summary slide at two (2) Electrified Aircraft Technology Rolling Recap sessions taking place at the 2021 AIAA and IEEE Electric Aircraft Technologies Symposium (EATS) and on January 3rd at the 2022 AIAA SciTech Forum. The Rolling Recap Sessions are organized by the AIAA Electrified Aircraft Technology Technical Committee and Aircraft Electric Propulsion and Power Working Group, and they

highlighted key developments in the emerging area of electrified aircraft and propulsion, including top papers and briefings presented at the 2021 AIAA Aviation Forum and other notable events. By providing a summary to the Rolling Recap organizing committee, this work provided additional exposure of the LARCASE team to AIAA conference attendees and the aerospace community.

In 2016, different students from LARCASE received awards for their posters presented on these research achievements at the 40th American Romanian Academy of Arts and Sciences ARA Congress. Mr Guillaume Tatrie and Mr Maximilien Hawawini (Internship students) have received the *1st Poster Award in Unmanned Aerial Vehicle*, Mr Maxime Kuitche (PhD student); Miss Marine Segui and Miss Anais Kerroux (Internship students) have received the *2nd Poster Award in Unmanned Aerial Vehicle*.

The PhD student Mr Oliviu Șugar Gabor received the *Excellence* grade from the committee of his thesis at ETS in 2015. Dr Șugar-Gabor is presently working as Assistant Professor at the Salford University in Manchester, Great Britain, and continues collaborating with Dr Botez.

4.8 Research projects and activities in collaboration with European Associations, Universities and Research Institutes

4.8.1 Participation as Member in various Romanian Associations

Dr Botez is:

- *Full Member from Canada of the American Romanian Academy of Arts and Science* since 1989
- *Member of Honor* of the *Asociatia Alumni Politehnica Aerospace Engineering* since 2018
- *Member* of the *Asociației Române de Propagandă a Industriei Aeronautice* A.R.P.I.A since 2018
- *Member* of the *Romanian Academic Association of Canada* (*RAAC*) since 2024

As mentioned also in the following sections 6.5 and 7, Dr Botez has done major contributions to the Romanian American Academy of Arts and Sciences ARA:

- Congress Chair of the "41st Congress of the Romanian-American Academy of Arts and Sciences ARA" that took place at the University of Craiova in Romania, 2017
- Member of the External Affairs Committee for the "American Romanian Academy of Arts and Sciences ARA" Leadership and Governance, 2013-2017
- Member of the "American Romanian Academy of Arts and Sciences ARA" Executive Committee as Canadian Branch representative and organizer, 2001-2009.
- Member of the "American Romanian Academy of Arts and Sciences ARA" Executive Committee, as Canadian Branch representative and organizer. Dr Botez was in charge of the revision of papers submitted for presentation at the ARA conferences. She was in charge to recruit ARA Canadian members. This participation has ensured contacts and collaborations with Romanian professors and researchers in Engineering throughout the world and has facilitated graduate student recruitment since 2000.
- Member of the "ARA Local Organizing Committee" of the 26th Annual Congress of the "American Romanian Academy of Arts and Sciences ARA", that took place in July 25-29, 2001, please see page 1 for more details on the website

Dr Botez has obtained two awards from the ARA: i) the *2017 ARA Award for Excellence in Aerospace Engineering for her International Contribution to the Aerospace Engineering and Education* and the ii) the *2021 ARA Excellence in Science Award.*

4.8.2 Collaboration with the National Institute for Aerospace Research Elie Carafoli INCAS

Dr Botez has editorial activities in collaboration with the INCAS:

- Editor-in-Chief, "INCAS Bulletin", since 2013
- Editorial Board Member, "INCAS Bulletin", 2009-2013.

Dr Botez was *Invited External Member* of the INCAS Scientific Board in Bucharest, Romania as part of its Main Management Structure in 2017.

Dr Botez is member of the Scientific Committees for the organisation of various international conferences organized by the INCAS since 2012. She was also invited as *Keynote Speaker* at these three types of conferences:

- The International Conference of Aerospace Institute for Aerospace Research Elie Carafoli INCAS "AEROSPATIAL" (every 2 years).
- The International Workshop on Numerical Modelling in Aerospace Science "NMAS" Conference (yearly).
- The "Caius Iacob" Conference on Fluid Mechanics and its Technical Applications (every 2 years).

The Excellence Diploma and *Medal* were obtained by Dr Botez for *her Achievements in Aerospace Romanian Research*. The medal was given for the celebration of 30 years since the fighter IAR-99 was designed and manufactured. Both of them were given to Dr Botez by Dr Nae Catalin, the INCAS Director and by the President of the INCAS Scientific Council, Dr Ioan Ursu on 24th of October 2018 at Bucharest in Romania at the Romanian Academy with the occasion of the conference called "100 ans of Aviation in Romania (1919-2018)", 2018.

4.8.3 Research projects in collaboration with Craiova University and presently with the Military Technical Academy “Ferdinand I” in Bucharest, Romania

Dr Botez has an on-going collaboration with Dr Lucian Teodor Grigorie since 2005, which is approximately 20 years. Dr Grigorie worked at the Craiova University in Romania until 2017, since when he is working at the Military Technical Academy "Ferdinand I", Faculty of Aircraft and Military Vehicles, Center of Excellence in Self-Propelled Systems and Technologies for Defense and Security, Bucharest in Romania. Dr Botez was Invited Professor at Craiova University until 2017 while Dr Grigorie is Invited Professor at ÉTS.

Dr Botez worked in collaboration as co-applicant with Dr Grigorie on the following five research projects led by him at ÉTS in Montreal. These projects were mainly funded by the Provincial and Canadian governmental agencies: Agence Universitaire de la Francophonie (AUF) and Ministère de l'Éducation, du Loisir et du Sport du Canada.

- Navigateurs inertiels à composants liés, à prix bas et hautes performances, basées sur la fusion adaptive dans des dispositions redondantes de nano et micro capteurs inertiels (2011). Project funded with **2.000 EUR** by Agence Universitaire de la Francophonie (AUF).
- La conception, la simulation numérique et l’optimisation d’un accéléromètre MEMS capacitif utilisé en applications aérospatiales (2008-2009). Project funded with **14.000 EUR** by Agence Universitaire de la Francophonie (AUF).
- La fusion en réseaux redondants des capteurs optoélectroniques miniaturisées des systèmes de navigation par inertie (2008). Project funded with **35.000 CAD** by Ministère de l'Éducation, du Loisir et du Sport du Canada.

- Étude expérimentale pour l'estimation et la compensation de la dépendance avec la température du biais d'un accéléromètre en utilisant des techniques de la logique neuro-flou (2007). Project funded with **2.000 EUR** by Agence Universitaire de la Francophonie (AUF).
- Etude numérique et expérimental d'un algorithme d'attitude pour un système inertiel a composants liés (2005). Project funded with **2.000 EUR** by Agence Universitaire de la Francophonie (AUF).

Dr Lucian Teodor Grigorie has also obtained PhD scholarships in 2005 and Postdoctoral fellowships in 2007, 2008 and 2011 from the Provincial and Canadian governmental agencies to work at ÉTS in collaboration with Dr Botez:

- Postdoctoral excellence scholarship for foreign researchers, offered by Gouvernement du Canada, Ministère de l'Éducation, du Loisir et du Sport, 2008.
- Scholarships for research training, offered by Agence Universitaire de la Francophonie (AUF) for research at University of Quebec, Montréal, Canada, 2005, 2007, 2011.

Dr Grigorie has also collaborated with Dr Botez on various research projects led by Dr Botez at the LARCASE, mainly on the CRIAQ MDO 505 and CRIAQ 7.1 projects, as well as on other projects.

Dr Grigorie and Dr Botez have written together, and in collaboration with their students, approximately 100 publications, such as peer-reviewed journal and conference proceedings papers, as well as chapter books.

4.8.4 Research collaborations with European teams

Dr Botez, as academic leader of the CRIAQ MDO 505 project has published **one journal paper and one conference proceeding paper** in collaboration with the Italian team with the aim to present the CRIAQ MDO 505 project achievements. The conference paper was very well presented by Dr Botez and her name was put on the '*Short List*' of best presenters at the Greener Aviation in Brussels, Belgium in 2016.

Two awards were obtained for the CRIAQ MDO 505 project:

- *Premio Venezia* offered by the *Italian Chamber of Commerce* to Dr Botez and her team for the CRIAQ MDO-505 project realizations, 2015.
- *Second-place Award* for the *CRIAQ MDO 505 on-going project* – project in collaboration with Bombardier, Thales, Polytechnique Montreal, NRC-IAR, Alenia, CIRA, University of Naples, 2014.

Dr Botez continues to work with her Italian partners from the CRIAQ-MDO 505 project, even after the end of this project.

For exemple, Dr Botez was one of the Editors of the book mentioned below. The biography of Dr Botez was mentioned on page xxxi of this book, as Editor of Section 4 of this book.

- "Morphing Wing Technology. Large Commercial Aircraft and Civil Helicopters", 2018, Editors in Chief: Concilio, A., Dimino, I., Pecora, R. and Editors: Aliabadi, F. M. H., Botez, R. M., Ricci, S., Semperlotti, F., 1st Edition, Elsevier.

The Chapter 12 of this book was written by Dr Grigorie and Dr Botez, and its title and pages numbers are:

- Grigorie, L.T., Botez, R. M., 2018, "Control Techniques for a Smart Actuated Morphing Wing Model: Design, Numerical Simulation and Experimental Validation", pages 351-397.

Dr Botez and the Italian team (Drs Rosario Pecora, Antonio Concilio and Ignazio Dimino) continue to collaborate. In fact, Dr Botez was invited by them as Keynote Speaker at the Opening Lecture of the Symposium 18 "Adaptive Structures for Aeronautical Applications" in the frame of the *XXVth International Congress of the Italian Association of Aeronautics and Astronautics* that took place in Rome, Italy, September 9-12 in 2019. Dr Botez also has participated in the organization of the *AIAA Adaptive Structures Special Sessions* at the AIAA SciTech 2022 conference, that took place in San Diego in January 3-7 in 2022, where she invited the Italian team to present their research in Special Sessions on Morphing Aircraft aspects.

Dr Botez contributed with 3 papers in two Special Issues on Morphing Aircraft Systems in the *Biomimetics* journal and in one Special Issue on Aerospace Mechanisms and Actuation in *Aircraft Actuators* journal following the invitation of the Guest Editors of these Special Issues, which were Drs Antonio Concilio, Dr Rosario Pecora and Dr Ignazio Dimino. This Italian team has also contributed with 2 papers in the *Applied Science* journal Special Issue on 'Aircraft Modeling and Simulation of the *Applied Science* journal for which Dr Botez was its Guest Editor.

Other interesting collaborations started between Dr Botez and the members of the MAAT and ACHEON teams, and 2 articles were written by media on these 2 research programs**.** She continues to collaborate with members of these teams, Dr Dean Vucinic from the Vesalius College in Brussels, Belgium, and Dr Alessandro Ceruti from Bologna University in Italy.

Dr Botez contributed with a chapter in the book edited by Dr Dean Vucinic from the Vesalius College in Brussels, Belgium following his invitation.

Dr Botez continues to work with Drs Murrieta Mendoza and Dr Roberto Felix Salvador, assistant professors at the Amsterdam University, and they published together with one of their students, supervised jointly with her, Mr Quincy van Irsel, one conference proceedings paper at the 2022 AIAA Aviation conference on the trajectory optimization using artificial intelligence techniques.

Dr Botez co-supervised two Master's students Federico Abel and Viitorio Rogoli from Bologna University in collaboration with Dr Alessandro Ceruti. These Master's students have worked on internships of 6 months in collaboration with Miss Marine Segui, PhD student from the LARCASE. Therefore, as seen in Section 6.1.3, two conference proceedings papers were written by these students in collaboration with their supervisors Drs Alessandro Ceruti and Dr Botez. In addition, two journal papers were published in the *Aeronautical Journal* and in the *Biomimetics* journals. In 2022, Dr Botez and Dr Ceruti have graduated two other Master's students, Mr Nicola Zonzini and Mr Daniele Pecorella who worked together with Mr Musavir Bashir.

Prof. Botez works also in collaboration with Dr Hikmet Karakoc from Eskheshir University in Turkey. They have co-supervised three students (one Master's and 2 PhD's) and published together articles in well-known aeronautical journals and refereed conferences.

Finally, Dr Botez also contributes on various research projects proposals as Canadian team member in collaboration with members of these European teams.

5. SIGNIFICANT RESEARCH CONTRIBUTIONS AS PROJECT PARTICIPANT

5.1 Interdisciplinary Center of Research in Operations related to the Development in Long Time CIRODD (2019-2024)

Dr Botez is member of the CIRODD, in which more than 90 members are working together. Dr Mohamed Cheriet from ÉTS is the CIRODD leader; the *CIRODD's mission is to accelerate an*

intelligent transformation of Quebec society through the establishment of sustainable innovation mechanisms in trans-disciplinary mode.

Dr Botez contributes in this research center to accelerate the implementation of the principles of sustainable development in major economic and strategic sectors in Quebec, mainly in the area of *Green Aircraft Technologies*. This Center is funded by the *Fonds de recherche du Québec – Nature et technologie* (*FQRNT*) *et Société et culture* (*FQRSC*) with the total amount of **3.6 mil. CAD.**

5.2 Collaborative Research and Development grant on DEpendable & Explainable Learning in Aerospace DELL (2019-2024)

In this Collaborative Research and Development (CRD) program led by University of Laval, the subject of dependable and explainable learning in the aerospace industry is treated by a multidisciplinary team of various universities: University of Montreal, McGill, UQAM, Polytechnique Montreal, ÉTS and other international collaborators mainly from France.

This program is funded by Thales Canada, Bell Helicopter Textron Canada, Bombardier and CAE - all major actors in the Canadian aerospace industry — as well as by the Institute for data valorization (IVADO) and the Consortium for Research and Innovation in Aerospace in Québec (CRIAQ) with the total amount of **10 mil. CAD**.
In this research program, Dr Botez is collaborator in its *Certification* section. In addition, Dr Botez is one of the 9 members of the Scientific Committee (SC) of this research project.

5.3 Research project in collaboration with GlobVision and Thales in Canada on the Diagnostics, Prognostic and Health Monitoring of Aircraft Flight Control System (2018-2021)

The project *DPHM-1711: Diagnostics, Prognostic and Health Monitoring of Aircraft Flight Control System – Application to Electrohydraulic and Electromechanical Flight Control Actuation and Sensing Systems* was funded with the amount of **3 mil. CAD** in the *Mid-TRL Program*: *Maturing Technology*, launched by the *Consortium for Aerospace Research and Innovation in Canada CARIC*.

The leader of this project was Mrs Armineh Garabedian from the company GlobVision Inc., and this project took place between teams from GlobVision Inc., Thales Canada, Concordia University, and ÉTS. Dr Yamina Boughari worked at the LARCASE as postdoctoral fellow in this project under the supervision of Dr Botez and they published, together with the GlobVIsion team, one journal paper.

6. DISSEMINATION OF RESEARCH IN PUBLICATIONS

Dr Botez' publications are mentioned in Section 6.1. The list of 553 scientific publications written by Dr Botez and her team can be consulted at ÉTS on the *Espace ÉTS Publications* website.

The titles of theses of Master's and PhD students supervised by Dr Botez at ÉTS since 2003 (when the website was designed) are mentioned in Section 6.2. These theses can be entirely consulted on the *website of Espace ÉTS Mémoires et theses*, Repérage par Directeur de mémoire/thèse - Espace ETS (etsmtl.ca)

The impact of Dr Botez publications on the recent period 2011-2020 is mentioned in Section 6.3, following a study done by Mrs Judith Boissonneault from the ÉTS Library.

6.1 List of Publications of Dr Botez

Dr. Botez and her LARCASE team have finalized a large number of publications, as seen in the sub-sections of this Section 6.1. The names of the students, authors and co-authors of these papers are underlined in the sub-sections below.

6.1.1 Papers published in peer-reviewed scientific journals (196)

1. Bashir, M., Negahban, M. H., Botez, R. M., Wong, T., 2024, "Numerical Simulation of the Transient Flow around the Combined Morphing Leading-Edge and Trailing-Edge Airfoil", *Biomimetics*, Special Issue: Compliant vs Kinematic Morphing Architectures: Complementary or Alternatives?, Vol. 9(2), pp. 1-28.
2. Hosseini, S. M., Bematol, I., Ghazi, G., Botez, R. M., 2024, "Enhanced Fuzzy-Based Super-Twisting Sliding-Mode Control System for the Cessna Citation X Lateral Motion", *Aerospace*, Special Issue: Flight Control (2nd Edition), Vol. 11(7).
3. Gurrola Arrieta, M., Botez, R., 2024, "A Methodology to determine the Precision Uncertainty in Gas Turbine Engine Cycle Models", *The Aeronautical Journal*, Vol. 128(1319), pp. 92-110.
4. Hashemi, S. M., Botez, R. M., Ghazi, G., 2024, "Bidirectional Long Short-Term Memory Development for Aircraft Trajectory Prediction Applications to the UAS-S4 Ehécatl", *Aerospace*, Special Issue: Advances in Air Traffic and Airspace Control and Management (2nd Edition), Vol. 11(8).
5. Bashir, M., Zonzini, N., Longtin Martel, S., Botez, R. M., Ceruti, A., Wong, T., 2024, "Numerical Investigation of the Dynamic Stall Reduction on the UAS-S45 Aerofoil using the Optimised Aerofoil Method", *The Aeronautical Journal*, Vol. 128(1321), pp. 441–468.
6. Negahban, M. H., Bashir, M., Traisnel, V., Botez, R. M., 2024, "Seamless Morphing Trailing Edge Flaps for UAS-S45 using High-Fidelity Aerodynamic Optimization", *Chinese Journal of Aeronautics*, Vol. 37(2), pp. 12-29.
7. Davari, H. S., Davari, M. S., Chowdhury, H., Botez, R. M., 2024, " Refining Airfoil Designs: Tailored Modifications for Enhanced Performance in Low Reynolds Number Conditions", *Sustainable Earth Review*, Vol. 4(2).
8. Tondji, Y., Ghazi, G., Botez, R. M., 2024, "Neural Networks and Support Vector Regression for the CRJ-700 Longitudinal Dynamics Modeling", *Journal of Aerospace Information Systems*, Vol. 21(3), pp. 263-278.
9. Segui, M., Botez, R. M., 2024, "Electric Motor Chain Modeling using Artificial Neural Networks and Semi-Empirical Methods", *Journal of Aerospace Information Systems*, Vol. 21(6).
10. Hashemi, S. M., Botez, R. M., Ghazi, G., 2024, "Robust Trajectory Prediction Using Random Forest Methodology Application to UAS-S4 Ehécatl", *Aerospace*, Vol. 11(1), pp. 1-15.
11. Gurrola Arrieta, M., Botez, R., Lasne, A., 2024, "An Engine Deterioration Model for Predicting Fuel Consumption Impact in a Regional Aircraft, *Aerospace*, Section: Aeronautics, Vol. 11(6).
12. Hashemi, S. M., Botez, R. M., 2023, "A Novel Flight Dynamics Modeling using Robust Support Vector Regression against Adversarial Attacks", *SAE International Journal of Aerospace*, Vol. 16(3), pp. 1-19.
13. Hashemi, S. M., Botez, R. M., Ghazi, G., 2023, "Blockchain PoS and PoW Consensus Algorithms for Airspace Management Application to the UAS-S4 Ehécatl", *Algorithms*, Section: Analysis of Algorithms and Complexity Theory, Vol. 16(10), pp. 1-16.
14. Davari, H. S., Davari, M. S., Botez, R., Chowdhury, H., 2023, "Maximizing the Peak Lift-To-Drag Coefficient Ratio of Airfoils by Optimizing the Ratio of Thickness to The Camber of Airfoils", *Sustainable Earth Review*, Vol. 3(4), pp. 46-61.
15. Soltanmohammad, B., Botez, R. M., 2023, "Control Moment Coefficient Methodology Validation for eVTOL Sizing", *The Romanian Journal of Technical Sciences*. *Applied Mechanics*, Vol. 68(2-3), pp. 161-182.
16. Bashir, M., Zonzini, N., Botez, R. M., Ceruti, A., Wong, T., 2023, "Flow Control around the UAS-S45 Pitching Airfoil using a Dynamically Morphing Leading Edge (DMLE): A Numerical

Study", *Biomimetics*, Special Issue: Aircraft Morphing Systems 2.0 - Selected as Editor's Choice Paper, Vol. 8(1), pp. 1-27.

17. Geronel, R. S., Botez, R. M., Bueno, D.D., 2023, "Dynamic Responses due to the Dryden Gust of an Autonomous Quadrotor UAV carrying a Payload", *The Aeronautical Journal*, Vol. 127(1307), pp. 116-138.
18. Hashemi, S. M., Hashemi, S. A., Botez, R. M., Ghazi, G., 2023, "Aircraft Trajectory Prediction Enhanced through Resilient Generative Adversarial Networks Secured by Blockchain: Application to UAS-S4 Ehécatl", *Applied Sciences*, Special Issue: Aerotech, Aerospace and Security Applications in the Age of Artificial Intelligence Support for Industry 4.0 and Green Technology, Vol. 13(17), pp. 1-15.
19. Hashemi, S. M., Hashemi, S. A., Botez, R. M., Ghazi, G., 2023, "A Novel Fault-Tolerant Air Traffic Management Methodology using Autoencoder and P2P Blockchain Consensus Protocol", *Aerospace*, Special Issue: Advances in Air Traffic and Airspace Control and Management, Vol. 10(4), pp. 1-13.
20. Negahban, M. H., Bashir, M., Botez, R. M., 2023, "Free-Form Deformation Parameterization on the Aerodynamic Optimization of Morphing Trailing Edge", *Applied Mechanics*, Special Issue: 'Feature Papers in Fluid Mechanics, Vol. 4(1), pp. 304-316.
21. Flores Salinas, M., Botez, R. M., Gauthier, G., 2023, "New Validation Methodology of an Adaptive Wing for UAV S45 for Fuel Reduction and Climate Improvement", *Applied Sciences*, Section: Aerospace Science and Engineering, Vol. 13(3), pp. 1-31.
22. Flores Salinas, M., Botez, R. M., Tavallaeinejad, M., Païdoussis, M. P., 2023, "Experimental Wind-Tunnel Study of the Dynamics of Inverted Foils for Energy Harvesting", *The Aeronautical Journal,* Vol. 127(1317), pp. 1927-1951.
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6.1.3 Published papers in conference proceedings (343)

1. Dos Santos, S. B., Botez, R. M., Bueno, D. D., 2025, "Crack Detection in Concrete Structures Using UAVs and Convolutional Neural Networks", *International Symposium on Dynamic Problems of Mechanics DINAME,* Águas de Lindóia, São Paulo (SP), Brazil.
2. Grigorie, L. T., Botez, R. M., Grigorie, O., Jula, N., 2024, "INS-MEMS/GPS Integrated Systems based Artificial Intelligence Algorithms for Navigation in GPS Challenging Environments", *2nd International Conference on Aerospace and Aeronautical Engineering*, Florence, Italy, March 21-22.
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13. Quintin, E., Andrianantara, R. P., Ghazi, G., Botez, R., 2024, "Neural Network Adaptive Controller with Approximate Dynamic Inversion for the Cessna Citation X Lateral Control", *American Institute of Aeronautics and Astronautics AIAA SciTech Forum*, Orlando, USA, January 8-12.
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22. Durand, A., Toulet, M., Ghazi, G., Botez, R. M., 2023, "Cessna Citation X Ground Performance Model for estimating Fuel Consumption and Emissions during Taxiing Operations", *Canadian Aeronautical Society Institute* (*CASI*) *Symposium*, Ottawa, Canada, November 14-16.
23. Negahban, M. H., Botez, R. M., 2023, "Twist Morphing Wing for Rolling Maneuver: Application to UAS-S45", *Canadian Aeronautical Society Institute* (*CASI*) *Symposium*, Ottawa, Canada, November 14-16.
24. Szymanski, M., Ghazi, G., Botez, R., 2023, "Single and Multi-Agent Reinforcement Learning Approach to Optimize Aircraft Ground Trajectories at Airports", *Joint 10th*

European Conference for Aeronautics and Space Sciences (*EUCASS*) & *9th Council of European Aerospace Societies* (*CEAS*) *Conference*, Lausanne, Switzerland, July 9-13.

25. Andrianantara, R. P., Ghazi, G., Botez, R. M., 2023, "Neural Network Adaptive Controller with Approximate Dynamic Inversion for Pitch Control of the Cessna Citation X", *American Institute of Aeronautics and Astronautics AIAA AVIATION Forum*, San Diego, USA, June 12-16.
26. Bashir, M., Negahban, M. H., Botez, R. M., Wong, T., 2023, "Aerodynamic Flow Control using a Dynamically Morphing Leading Edge (DMLE) for the UAS-S45 Airfoil", *American Institute of Aeronautics and Astronautics AIAA AVIATION Forum*, San Diego, USA, June 12-16.
27. Hosseini, S. M., Ghazi, G., Botez, R. M., 2023, "Application of Type One Adaptive Fuzzy Sliding Mode Control System for the Longitudinal Motion of the Cessna Citation X", *American Institute of Aeronautics and Astronautics AIAA AVIATION Forum*, San Diego, USA, June 12-16.
28. Tondji, Y., Ghazi, G., Botez, R. M., 2023, "CRJ 700 Longitudinal Aerodynamic Coefficients Identification using Support Vector Machine", *American Institute of Aeronautics and Astronautics AIAA AVIATION Forum*, San Diego, USA, June 12-16.
29. Hosseini, S. M., Ghazi, G., Botez, R. M., 2023, "Design of a Type Two Fuzzy-based system to Control the Pitch Rate of the Cessna Citation X", *American Institute of Aeronautics and Astronautics AIAA AVIATION Forum*, San Diego, USA, June 12-16.
30. Hosseini, S. M., Inga, C., Ghazi, G., Botez, R. M., 2023, "Model-Referenced Adaptive Flight Controller based on Recurrent Neural Network for the Longitudinal Motion of Cessna Citation X", *American Institute of Aeronautics and Astronautics AIAA AVIATION Forum*, San Diego, USA, June 12-16.
31. Hashemi, S. M., Botez, R. M., Ghazi, G., 2023, "Comparison Study between PoW and PoS Blockchains for Unmanned Aircraft System Traffic Management", *American Institute of Aeronautics and Astronautics AIAA AVIATION Forum*, San Diego, USA, June 12-16.
32. Szymanski, M., Ghazi, G., Botez, R. M., 2023, "Development of a Map-Matching Algorithm for the Analysis of Aircraft Ground Trajectories using ADS-B Data", *American Institute of Aeronautics and Astronautics AIAA AVIATION Forum*, San Diego, USA, June 12-16.
33. Bashir, M., Longtin Martel, S., Botez, R. M., Wong, T., 2023, "Design of a Variable Camber Morphing Winglet with Composite Lamination Structural Analysis and Failure Analysis– Application to the UAS-S45", *American Institute of Aeronautics and Astronautics AIAA SciTech Forum*, National Harbor, MD, USA, January 23-27.
34. Hashemi, S., Hashemi, S. A., Botez, R. M., Ghazi, G., 2023, "Attack-tolerant Trajectory Prediction using Generative Adversarial Network Secured by Blockchain Application to the UAS-S4 Ehécatl", *American Institute of Aeronautics and Astronautics AIAA SciTech Forum*, National Harbor, MD, USA, January 23-27.
35. Bashir, M., Zonzini, N., Botez, R. M., Ceruti, A., Wong, T., 2023, "Numerical Investigation of a Dynamically Morphing UAS-S45 Wing Airfoil at Moderate Reynolds Number", *American Institute of Aeronautics and Astronautics AIAA SciTech Forum*, National Harbor, MD, USA, January 23-27.
36. Geronel, R. S., Botez, R. M., Bueno, D. D., 2023, "A Vibration Suppression for Payloads attached to an UAV based on SMA Springs", *American Institute of Aeronautics and Astronautics AIAA SciTech Forum*, National Harbor, MD, USA, January 23-27.
37. Hashemi, S., Hashemi, S. A., Botez, R. M., Ghazi, G., 2023, "A Novel Air Traffic Management and Control Methodology using Fault-Tolerant Autoencoder and P2P Blockchain Application on the UAS-S4 Ehécatl", *American Institute of Aeronautics and Astronautics AIAA SciTech Forum*, National Harbor, MD, USA, January 23-27.
38. Negahban, M. H., Bashir, M., Botez, R. M., 2023, "Aerodynamic Optimization of a Novel Synthetic Trailing Edge and Chord Elongation Morphing: Application to the UAS-S45 Airfoil", *American Institute of Aeronautics and Astronautics AIAA SciTech Forum*, National Harbor, MD, USA, January 23-27.

39. Zohreh Nejad, E., Ghazi, G., Botez, R. M., 2023, "Modeling the Longitudinal Dynamics of the Cessna Citation X using Neural Network Methodology", *American Institute of Aeronautics and Astronautics AIAA SciTech Forum*, National Harbor, MD, USA, January 23-27.
40. Longtin Martel, S., Bashir, M., Botez, R., Wong, T., 2023, "A Pareto Multi-Objective Optimization of a Camber Morphing Airfoil using Non-Dominated Sorting Genetic Algorithm", *American Institute of Aeronautics and Astronautics AIAA SciTech Forum*, National Harbor, MD, USA, January 23-27.
41. Negahban, M. H., Bashir, M., Botez, R. M., 2022, "Impact of Free Deformation Control Points on the Optimization of UAS-S45", *New Achievements Unmanned Systems: International Symposium on Unmanned Systems and The Defense Industry* (Virtual).
42. Hashemi, S. M., Hashemi, S. A., Botez, R. M., 2022, "Reliable Aircraft Trajectory Prediction using Autoencoder Secured by P2P Blockchain", *New Achievements Unmanned Systems: International Symposium on Unmanned Systems and The Defense Industry* (Virtual).
43. Hashemi, S., Botez, R. M., 2022, "A Novel Flight Dynamics Modeling Procedure using Support VectorRegression relying on Augmented Data*", American Institute of Aeronautics and Astronautics AIAA SciTech Forum* (Virtual).
44. Tondji, Y., Botez, R. M., Ghazi, G., 2022, "Identification of CRJ-700 Stall Dynamic Model using Neural Networks", *Forum Mobilit.AI*, Québec, Canada, May 17-19.
45. Gurrola-Arrieta, M. Botez, R.M., 2022, "New Generic Turbofan Model for High-Fidelity Off-Design Studies", *AIAA Aviation 2022*, Chicago, IL, USA, June 27-July 1.
46. Van Iersel, Q. G., Murrieta-Mendoza, A., Félix Patrón, R. S., Hashemi, S. M., Botez, R. M., "The Attack and Defense on Aircraft Trajectory Prediction Algorithms", *AIAA Aviation 2022*, Chicago, IL, USA, June 27-July 1.
47. Gurrola-Arrieta, M., Botez, R. M., 2022, "In-house High-Fidelity Generic Turbofan Model for Aerothermodynamic Design Studies", *AIAA SciTech Forum 2022*, San Diego, USA, January 3-7.
48. Hashemi, S., Botez, R. M., 2022, "Support Vector Regression Application for the Flight Dynamics New Modelling of the UAS-S4", Invited Paper at the Special Session: "Canadian Smart Materials and Adaptive Structures Research Programs IV *AIAA SciTech Forum 2022*, San Diego, USA, January 3-7.
49. Negahban, H., Botez, R. M., Razavi, S. E., 2022, "New Method for the Flow Modeling around chord-wise Morphing Airfoil", Invited Paper at the Special Session: "Canadian Smart Materials and Adaptive Structures Research Programs IV", *AIAA SciTech Forum 2022*, San Diego, USA, January 3-7.
50. Bashir, M., Longtin-Martel, S., Botez R., Wong, T., 2022, "Aerodynamic Shape Optimization of Camber Morphing Airfoil based on Black Widow Optimization", Invited Paper at the Special Session: "Canadian Smart Materials and Adaptive Structures Research Programs IV", *AIAA SciTech Forum 2022*, San Diego, USA, January 3-7.
51. Tondji, Y., Ghazi, G., Botez, R. M., 2022, "CRJ700 Aerodynamic Coefficients Identification in Dynamic Stall Conditions using Neural Networks", Invited Paper at the Special Session: "Canadian Smart Materials and Adaptive Structures Research Programs IV", *AIAA SciTech Forum 2022*, San Diego, USA, January 3-7.
52. Segui, M., Abel, F., Botez, R. M., Ceruti, A., 2022, "Cruise Performances Improvement of the Regional Jet CRJ700 using an Adaptive Winglet", Invited Paper at the Special Session: "Canadian Smart Materials and Adaptive Structures Research Programs I", *AIAA SciTech Forum 2022*, San Diego, USA, January 3-7.
53. Meyran, P., Pain, H., Botez, R. M., 2022, "Structural Design of a Morphing Winglet to optimize the Aerodynamic Performance of the CRJ-700 Aircraft", Invited Paper at the Special Session: "Canadian Smart Materials and Adaptive Structures Research Programs I", *AIAA SciTech Forum 2022*, San Diego, USA, January 3-7.
54. Geronel, R., Bueno, D., Botez, R. M., 2022, "Vibration Analysis of a Payload connected to Quadrotor-type UAV by SMA spring", Invited Paper at the Special Session: "Canadian

Smart Materials and Adaptive Structures Research Programs I", *AIAA SciTech Forum 2022*, San Diego, USA, January 3-7.

55. Bashir, M., Longtin-Martel, S., Botez R., Wong, T., 2022, "Aerodynamic Design and Performance Optimization of Camber Adaptive Winglet for the UAS-S45", Invited Paper at the Special Session: "Canadian Smart Materials and Adaptive Structures Research Programs I", *AIAA SciTech Forum 2022*, San Diego, USA, January 3-7.
56. Botez, R. M., 2022, "Overview of Morphing Aircraft and Unmanned Aerial Systems Methodologies and Results – Application on the Cessna Citation X, CRJ-700, UAS-S4 and UAS-S45", Invited Paper at the Special Session: "Canadian Smart Materials and Adaptive Structures Research Programs I", *AIAA SciTech Forum 2022*, San Diego, USA, January 3-7.
57. Geronel, R., Bueno, D., Botez, R. M., 2021, "Vibration Analysis of a Payload connected to Quadrotor-type UAV by SMA spring", *26th International Congress of Mechanical Engineering – COBEM 2021*, Virtual Conference, Brazil, November 22-26.
58. Bashir, M., Longtin Martel, S., Botez, R. M., Wong, T., 2021, "Aerodynamic Shape Optimisation of the Morphing Leading Edge for the UAS-S45 Winglet", *International Symposium on Unmanned Systems and the Defense Industry ISUDEF*, Washington, DC, USA, October 26-28.
59. Botez, R. M., Kammegne, J., Grigorie, L. T., Mamou, M., Mebarki, Y., 2021, "Experimental Evaluation of the Optimized Aero-Structure-Control Morphing Wing Technology Feasibility for a Full-Scale Portion of a Regional Aircraft Wing", *25th International Congress of Theoretical and Applied Mechanics*, Milano, Italy, August 22-27.
60. Bashir, M., Longtin-Martel, S., Botez R., Wong, T., 2021, "Numerical Study of the Boundary Layer Behavior on Morphing Trailing Edge Wing using Intermittency Transition Model", *2021 AIAA Virtual Forum and Exposition*, USA, August 2-6.
61. Segui, M., Botez, R., 2021, "Electric Motor Modeling using Artificial Neural Networks: Application for Drones", *2021 AIAA Virtual Forum and Exposition*, USA, August 2-6.
62. Andrianantara, R. P., Ghazi G., Botez, R. M., 2021, "Aircraft Engine Performance Model Identification using Artificial Neural Networks, *2021 AIAA Propulsion & Energy*, USA, August 9-11.
63. Tondji, Y., Botez, R., 2021, "CRJ 700 Stall Dynamics Identification using Neural Networks", *Canadian Aeronautics and Space Institute CASI Aircraft Design and Development Virtual Symposium*, Canada, June 14-18.
64. Stepan, A., Ghazi, G., Botez, R. M., 2021, "Prediction of Aero-propulsive Performance Using Adaptative Lookup Tables", *Canadian Aeronautics and Space Institute CASI Propulsion Virtual Symposium*, Canada, June 14-18.
65. Gurrola-Arrieta, M., Botez, R. M., 2021, "An Accurate Generic Turbofan Aero-Thermodynamic Model for Design Trade-Off Studies", *Canadian Aeronautics and Space Institute CASI Propulsion Virtual Symposium*, Canada, June 14-18.
66. Segui, M., Botez, R. M., 2021, "Improvement of the Regional Jet CRJ700 Winglet based on Morphing Wing Principles", *Canadian Aeronautics and Space Institute CASI Aircraft Design and Development Virtual Symposium*, Canada, June 14-18.
67. Bashir, M., Longtin-Martel, S., Botez, R. M., 2021, "An Extended Assessment of Camber Morphing Analysis for the Aerodynamic Performance of the UAS-S45 Airfoil", *Canadian Aeronautics and Space Institute CASI Aerodynamics Virtual Symposium*, Canada, June 14-18.
68. Hashemi, S., Botez, R. M., 2021, "UAS-S4 Flight Dynamics Model Prediction based on Data Augmentation and Support Vector Regression", *Canadian Aeronautics and Space Institute CASI Aircraft Design and Development Virtual Symposium*, Canada, June 14-18.
69. Andrianantara, R. P., Botez, R., 2021, "General Electric CF34-8C5B1 Turbofan Parameter Estimation New Approach using Flight Tests and Artificial Neural Networks", *Canadian Aeronautics and Space Institute CASI Propulsion Virtual Symposium*, Canada, 14-18 iunie.
70. Tondji, Y., Botez, R., 2021, "CRJ 700 Stall Dynamics Identification using Neural Networks",

Virtual MobiliT.AI Forum, Canada, May 10-12.

71. Botez, R. M., Grigorie, L. T., Khan, S., Mamou, M., Mebarki, Y., 2021, "A Smart Controlled Morphing Wing Experimental Model with the Structure based on a Full Scaled Portion of a Real Wing", *Virtual AIAA SciTech 2021 Forum*, Special Session: Canadian Smart Materials and Adaptive Structures Research Programs I, SUA, 11-21 ianuarie.
72. Hedi Trad, M., Segui, M., Botez, R. M., 2020, "Airfoils Design Based on Neural Networks and Wing Aerodynamic Coefficients", *Virtual AIAA Aviation Forum*, USA, June 15-19.
73. Yañez-Badillo, H., Kuitche, M. A. Jr., Botez, R. M., 2020, "Disturbance Rejection in Longitudinal Control for the UAS-S4 Ehécatl Design", *Virtual AIAA Aviation Forum*, USA, June 15-19.
74. Hashemi, S. M., Botez, R. M., Grigorie, L. T., 2020, "Nonlinear Adaptive Fuzzy Control of Chaotic Uncertain Click Mechanism Flapping-Wing", *Virtual AIAA Aviation Forum*, USA, June 15-19.
75. Foster Stangarlin, P. H., Ribeiro, F. A., Botez, R. M., Bueno, D., 2020, "Flutter Suppression using Magnetorheological Dampers and a LMI-based Controller", *Second International Symposium on Flutter and its Application* (*ISFA2020*), Paris, Franța, May 11-15.
76. Tavallaeinejad, M., Païdoussis, M. P., Salinas, M. F., Legrand, M., Khein, M., Botez, R. M., 2020, "Why Inverted Flags Flap: An Experimental Study", *Second International Symposium on Flutter and its Application* (*ISFA2020*), Paris, France, May 11-15. (this article has won the **PhD Prize of ISFA 2020**).
77. Murrieta-Mendoza, A., Ruiz, H., Botez, R., 2019, "Horizontal Flight Trajectory Optimization Considering the RTA Constraint Using Particle Swarm Optimization", International Cross-industry Safety Conference (*ICSC*) and the 2nd International Symposium on Aircraft Technology, MRO and Operations (*ISATECH*), Amsterdam, Netherlands, October 9-11.
78. Nguyen, D. H., Botez, R. M., Grigorie, L. T., Mamou, M., Mébarki, Y., 2019, "Control of a Full-Scale Portion of a Regional Aircraft Morphing Wing", *30th International Conference on Adaptive Structures and Technologies ICAST 2019*, Montreal, Canada, October 7-11.
79. Tavallaeinejad, M. Flores Salinas, M., Abdelbaki, A. R., Legrand, M., Botez, R. M., Païdoussis, M. P., 2019, "An Experimental Investigation of the Dynamics of an Inverted Flap with a Rigid Splitter Plate", *IUTAM Symposium on Fluid-Structure Interactions in honour of Michael Païdoussis*, Montreal, Canada, August 12-14.
80. Ghazi, G., Botez, R. M., Kossinga-Yalemba, M., 2019, "Methodology to identify a Mathematical Model for predicting Cessna Citation X Cruise Performance using Flight Manual Data", *8th European Conference for Aeronautics and Space Sciences EUCASS*, Madrid, Spain, July 1-4.
81. Segui, M., Rogoli, V., Botez, R. M., Ceruti, A., 2019, "Cessna Citation X Cruise Improvement using Morphing Wing Application on its Horizontal Tail", *8th European Conference for Aeronautics and Space Sciences EUCASS*, Madrid, Spania, 1-4 iulie.
82. Tchatchueng Kammegne, M. J., Grigorie, L. T., Botez, R. M., Mamou, M., Mébarki, Y., 2019, "Morphing Technology – Experiments on a Real Regional Aircraft Wing", *The 43rd Congress of the American Romanian Academy of Arts and Sciences ARA*, Thessaloniki, Greece, June 10-13.
83. Hashemi, S., M., Botez, R. M., 2019, "Nonlinear Fuzzy Control of Trailing Edge Flap Blade Vibration in Chaotic Condition", *Canadian Aeronautics and Space Institute CASI AERO 2019*, Laval, Que., Canada, May 14-16.
84. Segui, M., Botez, R. M., Paper, E., 2019, "Evaluating the Impact of Morphing Horizontal Tail Design of the UAS-S45", *Canadian Aeronautics and Space Institute CASI AERO 2019*, Laval, Que., Canada, May 14-16.
85. Segui, M., Castelar, Y., Botez, R. M., 2019, "Wing Airfoils Generation based on a New Parametric Curve for Aerodynamic Optimization Design Application", *Canadian Aeronautics and Space Institute CASI AERO 2019*, Laval, Que., Canada, May 14-16.
86. Botez, R. M., Tchatchueng Kammegne, M. J., Grigorie, L. T., Mamou, M., Mebarki, Y., 2019, "Wind Tunnel Testing of a Morphing Wing Experimental Model for a Regional

Aircraft", *European Aeronautics Days - Tandem AeroDays*, Bucharest, Romania, May 27-30.

87. Yañez-Badillo, H., Kuitche, M., Botez, R. M., 2019, "Generalized Extended State Observer Based-Control Application for Active Disturbance Rejection of the UAS-S4 Ehécatl Design", *Canadian Aeronautics and Space Institute CASI AERO 2019*, Laval, Que., Canada, May 14-16.
88. Communier, D., Botez, R. M., Wong, T., 2019, "Rolling Authority of a Morphing Trailing Edge System Design", *Canadian Aeronautics and Space Institute CASI AERO 2019*, Laval, Que., Canada, May 14-16.
89. Yanez Badillo, H., Beltran Carbajal, F., Tapia Olvera, R., Kuitche, M. A., Botez, R. M., 2019, "Generalized Extended State Observer Based Control for Active Suppression of Forced Vibrations in a Multi-Rotor Unmanned Vehicle", *26th International Congress of Sound and Vibration ICSV 26*, Montreal, Que., Canada, July 7-11.
90. Yanez Badillo, H., Beltran Carbajal, F., Tapia Olvera, R., Kuitche, M. A., Botez, R. M., 2019, "Integral Compensation for Disturbance Rejection in Longitudinal Flight Control of a Fixed Wing Unmanned Aerial System", *26th International Congress of Sound and Vibration ICSV 26*, Montreal, Que., Canada, July 7-11.
91. Abid, K., Ghazi, G., Thioulouse, L., Botez, R. M., 2019, "New Algorithm for Fuel Flow Prediction and its Correction during the Cruise - Application on the Cessna Citation X Business Aircraft", *AIAA Scitech 2019 Forum*, San Diego, CA, USA, July 7-11.
92. Botez, R. M., 2018, "Green Aircraft Minimum Fuel Consumption Methodologies", *Global and Regional in Environmental Protection GLOREP 2018 Conference*, Timișoara, Romania, November 15-17.
93. Segui, M., Botez, R., 2018, "Cessna Citation X Climb and Cruise Performance Improvement using Adaptive Winglet", *Advanced Aircraft Efficiency in a Global Air Transport System AEGATS'18*, Toulouse, France, October 23-25.
94. Segui, M., Mantilla, M., Botez, R., 2018, "Design and Validation of an Aerodynamic Model of the Cessna Citation X Horizontal Stabilizer using both OpenVSP and Digital Datcom", *Advanced Aircraft Efficiency in a Global Air Transport System AEGATS'18*, Toulouse, France, October 23-25.
95. Kuitche, M., Botez, R. M., 2018, "Flight Dynamics Simulator Design Studies for Unmanned Aerial Systems", *International Symposium on Electric Aviation and Autonomous Systems 2018*, Kiev, Ukraine, October 10-12.
96. Segui, M., Ghazi, G., Botez, R., Thompson, E., 2018, "Design, Development and Validation of a Cessna Citation X Aerodynamic Model using OpenVSP Software", *Modeling and Simulation Technologies Conference*, *2018 AIAA Aviation and Aeronautics Forum and Exposition*, Atlanta, GA, USA, June 25-29.
97. Segui, M., Mantilla, M., Ghazi, G., Botez, R., 2018, "New Economical Cruise Methodology for the Cessna Citation X Business Jet by an Original Morphing Horizontal Tail Application", *Modeling and Simulation Technologies Conference, 2018 AIAA Aviation and Aeronautics Forum and Exposition*, Atlanta, GA, USA, June 25-29.
98. Segui, M., Mantilla, M., Botez, R. M., 2018, "Design and Validation of an Aerodynamic Model of Cessna Citation X Horizontal Stabilizer using both OpenVSP and Digital Datcom", *The 6th International Conference on Energy and Environment Research ICEER 2018*, Innsbruck, Austria, February 24-25.
99. Segui, M., Botez, R. M., 2018, "Aerodynamic Coefficients Prediction from Minimum Computation Combinations using OPENVSP Software", *The 6th International Conference on Energy and Environment Research ICEER 2018*, Innsbruck, Austria, February 24-25.
100. Ghazi, G., Devillers, M.-H., Botez, R. M., 2018, "Development of an Efficient Algorithm for Cessna Citation X Speed Optimization in Cruise", *The 6th International Conference on Energy and Environment Research ICEER 2018*, Innsbruck, Austria, February 24-25.
101. Bardela, P. A., Botez, R. M., Bournisien, T., Rusovici, R., 2018, "Identification and Validation of the Cessna Citation X Turbofan Modelling with Flight Tests", *AIAA Science*

and Technology Forum and Exposition SciTech, Kissimmee, FL, USA, January 7-11.

102. Kuitche, M., Segui, M., Ghazi, G., Botez, R., 2017, "New Methodology for Longitudinal Flight Dynamics Modelling of the UAS-S4 Ehecatl towards its Aerodynamics Estimation Modelling", *AIAA Science and Technology Forum and Exposition SciTech 2017,* Grapevine, TX, SUA, 9-13 ianuarie.
103. Segui, M., Kuitche, M., Botez, R., 2017, " Longitudinal Aerodynamic Coefficients of Hydra Technologies UAS-S4 from Geometrical Data", *AIAA Science and Technology Forum and Exposition SciTech 2017,* Grapevine, TX, SUA, 9-13 ianuarie.
104. Zaag, M., Botez, R., 2017, "Cessna Citation X Engine Model Identification from Flight Tests based on Neural Networks", *AIAA Science and Technology Forum and Exposition SciTech 2017*, Grapevine, TX, SUA, 9-13 ianuarie.
105. Bardela, P.-A., Botez, R., 2017, "Identification and Validation of the Cessna Citation X Turbofan Modeling with Flight Tests", *AIAA Science and Technology Forum and Exposition SciTech 2017*, Grapevine, TX, SUA, 9-13 ianuarie.
106. Ghazi, G., Bosne, M., Sammartano, Q., Botez, R., 2017, "Cessna Citation X Stall Characteristics Identification from Flight Data using Neural Networks", *AIAA Science and Technology Forum and Exposition SciTech 2017*, Grapevine, TX, SUA, 9-13 ianuarie.
107. Koreanschi, A., Șugar Gabor, O., Tondji, Y., Botez, R., 2017, "Numerical and Experimental Testing of a Morphing Upper Surface Wing Equipped with Conventional and Morphing Ailerons", *AIAA Science and Technology Forum and Exposition SciTech 2017*, Grapevine, TX, USA, January 9-13.
108. Murrieta Mendoza, A., Mugnier, P., Botez, R., 2017, "Vertical and Horizontal Flight Reference Trajectory Optimization for a Commercial Aircraft", *AIAA Science and Technology Forum and Exposition SciTech 2017*, Grapevine, TX, USA, January 9-13.
109. Botez, R. M., Koreanschi, A., Șugar Gabor, O., Mebarki, Y., Mamou, M., Tondji, Y., Brianchon, G., Tchatchueng, J., Guezguez, M., Flores Salinas, M., Grigorie, L. T., Amoroso, F., Pecora, R., Lecce, L., Amendola, L., Dimino, I., Concilio, A., 2016, "Innovative Wing Tip Equipped with Morphing Upper Surface and Morphing Aileron for Greener Aviation", *Greener Aviation*, Brussels, Belgium, November 11-13.
110. Ruby, M., Botez, R. M., 2016, "Trajectory Optimization for Vertical Navigation using the Harmony Search Algorithm", *20th International Federation of Automatic Control IFAC Symposium on Automatic Control in Aerospace ACA 2016*, Sherbrooke, Que., Canada, August 21-25.
111. Murrieta-Mendoza, A., Romain, C., Botez, R. M., 2016, "Commercial Aircraft Lateral Flight Reference Trajectory Optimization", *20th International Federation of Automatic Control IFAC Symposium on Automatic Control in Aerospace ACA 2016*, Sherbrooke, Que., Canada, August 21-25.
112. Dăncilă, B. D., Beulze, B., Botez, R. M., 2016, "Geometrical Vertical Navigation Trajectory Optimization – Comparative Performance Evaluation of Phase versus Phase and Altitude-Dependent Preferred Gradient Selection", *20th International Federation of Automatic Control IFAC Symposium on Automatic Control in Aerospace ACA 2016*, Sherbrooke, Que., Canada, August 21-25.
113. Murrieta-Mendoza, A., Mugnier, P., Botez, R. M., 2016, "Vertical Reference Trajectory Optimization and Simulation for a Commercial Aircraft", *11th International Conference on Modeling, Optimization and Simulation MOSIM'16*, Montreal, Que., Canada, August 22-24.
114. Murrieta-Mendoza, A., Romain, C., Botez, R. M., 2016, "3D Reference Trajectory Optimization for a Commercial Aircraft using a Graph Search Algorithm", *11th International Conference on Modeling, Optimization and Simulation MOSIM'16,* Montreal, Que., Canada, August 22-24.
115. Nguyen, D. H., Tchatchueng Kammegne, M. J., Botez, R. M., Grigorie, L. T., 2016, "Open Loop Morphing Wing Architecture based ANFIS Controller", *16th AIAA Aviation Technology, Integration, and Operations Conference*, Washington, DC, USA, June 13-17.
116. Tchatchueng Kammegne, M. J., Botez, R. M., Grigorie, L. T., Mamou, M., Mebarki, Y.,

2016, "A Wind Tunnel tested Control System for a Morphing Wing Actuation Mechanism", *AIAA Atmospheric Flight Mechanics Conference*, Washington, DC, USA, June 13-17.

117. Murrieta Mendoza, A., Hamy, A., Botez, R. M., "Lateral Reference Trajectory Algorithm Using Ant Colony Optimization", *16th AIAA Aviation Technology, Integration, and Operations Conference*, Washington, DC, USA, June 13-17.
118. Murrieta Mendoza, A., Bunel, A., Botez, R. M., 2016, "Aircraft Vertical Reference Trajectory Optimization With a RTA Constraint Using the ABC Algorithm", *16th AIAA Aviation Technology, Integration, and Operations Conference*, Washington, DC, USA, June 13-17.
119. Sugar Gabor O., Koreanschi, A., Botez, R. M., Mamou, M., Mebarki, Y., 2016, "Analysis of the Aerodynamic Performance of a Morphing Wing-Tip Demonstrator Using a Novel Nonlinear Vortex Lattice Method", *34th AIAA Applied Aerodynamics Conference, AIAA Aviation*, Washington, DC, USA, June 13-17.
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328. Botez, R.M., Boustani, I., Vayani, N., 1999, "Active Vibration Control for a Flexible Aircraft equipped with Gust Load Control System", *The 6th International Congress on Sound and Vibration*, Copenhagen, Denmark, July 5-8.
329. Botez, R.M., Bigras, P., 1999, "Aerodynamic Approximation of Unsteady Forces for the Aeroservoelasticity Study", *The 46th CASI Canadian Aeronautics and Space Institute Annual Conference*, Montreal, Que., Canada, May 2-5.
330. Botez, R.M., Boustani, I., Vayani, N., 1999, "Optimal Control Laws for Gust Alleviation", *The 46th CASI Canadian Aeronautics and Space Institute Annual Conference*, Montreal, Que., Canada, May 2-5.
331. Botez, R. M., 1998, "L'étude des interactions aéroservoélastiques sur un avion à commande éléctrique", *66e Congrès de l'Association Francophone pour le savoir ACFAS*, Quebec, Canada, May 11-15.
332. Dumitrache, A., Botez, R.M., 1998, "On the Calculus of Heat Transfer in Forced Convective Boundary Layer", *The CSME Forum 1998 – Symposium on Thermal and Fluids Engineering*, Toronto, Ont., Canada, May 19-22.
333. Biskri, D., Botez, R.M., Petermann, B., Thibault, R., 1998, "Matrix$_x$ versus CAELIB", *Matrix$_x$ Users Meeting*, Dorval, Que., Canada, October 15.
334. Botez, R. M., 1997, "Three Routes to Chaos for One System of Articulated Cylinders Subjected to Annular Flow", *2nd Conference on Romanians and Romania in the Contemporary Science,* Brașov, Romania, May 27 - 31.

335. Botez, R.M., Païdoussis, M.P., 1994, "Nonlinear and Chaotic Dynamics of Articulated Cylinder in Confined Axial Flow", *5th Conference on Nonlinear Vibrations, Stability, and Dynamics of Structures and Mechanics,* Blacksburg, VA, USA, June 12-16.
336. Païdoussis, M.P., Botez, R.M., 1993, "Quasi-Periodic and Period-Doubling Routes to Chaos for a Three Degree of Freedom Articulated Cylinder System Subjected to Confined Axial Flow", *1st European Nonlinear Oscillations Conference*, Hamburg, Germany, August 16-20.
337. Païdoussis, M.P., Botez, R.M., 1993, "Étude sur la dynamique et le chaos d'un système de cylindres rigides", *61st Conférence de l'ACFAS,* Rimouski, Que., Canada, May 17-21.
338. Païdoussis, M.P., Botez, R.M., 1993, "Routes to Chaos for an Articulated System in Axial Flow", *15th Canadian Congress of Applied Mechanics CANCAM*, Kingston, Ont., Canada, May 30-June 4.
339. Païdoussis, M.P., Botez, R.M., 1992, "Nonlinear Dynamics of Articulated Cylinders Subjected to Confined Axial Flow", *4th Conference on Nonlinear Vibrations, Stability, and Dynamics of Structures and Mechanics*, Blacksburg, VA, USA, June 7-11.
340. Païdoussis, M.P., Botez, R.M., 1992, "Nonlinear Dynamics of Articulated Cylinders Subject to Confined Axial Flow", *1992 ASME International Symposium on Flow-Induced Vibrations and Noise*, Anaheim, CA., USA, July 10-15.
341. Botez, R.M., Marchand, O., Paraschivoiu, I., 1989, "Une étude comparative des modèles semi-empiriques de décrochage dynamique", *11ième Conférence Canadienne de mécanique appliquée CANCAM*, Ottawa, Ont., Canada, May 28-June 2.
342. Botez, R.M., 1989, "Une étude comparative des modèles semi-empiriques pour la prédiction du décrochage dynamique", *AIAA Conférence régionale Nord-Est des étudiants*, Montreal, Que., Canada, April 13-15.
343. Botez, R.M., 1990, "Comparaison des six modèles semi-empiriques de décrochage dynamique", *15th Congress of the American Romanian Academy of Arts and Sciences ARA*, Montreal, Que., Canada, June 14-18.

6.1.4 Books, Editorials and Theses (5)

1. Botez, R. M., Nae, C., 2018, "Forward", INCAS Bulletin, Vol. 10(2), pp. 1-2,
2. Botez, R. M., Grigorie, L. T., Șugar Gabor, O., Murrieta-Mendoza, A. (editori), 2022, "Aircraft Modeling and Simulation", Printed Edition Book of the Special Issue Published in Applied Sciences, Editura MDPI, pp. 1-128, Applied Sciences | Special Issue : Aircraft Modeling and Simulation (mdpi.com)
3. Concilio, A., Dimino, I., Pecora, R., Aliabadi, F. M. H., Botez, R. M., Ricci, S., Semperlotti, F. (editors and co-editors), 2018, "Morphing Wing Technology. Large Commercial Aircraft and Civil Helicopters", Elsevier Edition, pp. 1-894.
4. Botez, R., 1994, "Nonlinear Dynamics of an Articulated Cylinder System subjected to confined Axial Flow", PhD thesis, McGill University Libraries, Montreal, Que., Canada, pp. 1-330.
5. Botez, R. M., 1989, "Etude comparative des modèles semi-empiriques de décrochage dynamique", Master thesis, Polytechnique Montreal, Que., Canada, pp. 1-204.

6.1.5 Course and Seminar Handbooks for Teaching at ETS (in French)

1. Botez, R. M., 2021, "Notes de cours - Introduction à l'avionique" - GPA 745, pp. 1-400.
2. Botez, R. M., 2017, "Notes de cours - Résistance des matériaux" – GPA 305, pp. 1-192.
3. Botez, R. M., 2007, "Notes de laboratoires - Introduction à l'avionique" – GPA 745, pp. 1-106.
4. Botez, R. M., 2006, "Notes de travaux pratiques - Résistance des matériaux" – GPA 305, pp. 1-130.
5. Botez, R. M., 2005, "Notes de cours - Contrôle des avions" – GPA 741, pp. 1-296.
6. Botez, R. M., 2004, "Notes de laboratoires - Contrôle des avions" – GPA 741, pp. 1-68.

6.1.6 Articles published in *Substance* at ÉTS for research scientific dissemination in both English and French languages (52)

1. Negahban, M. H., Bashir, M., Botez, R. M., 2023, "Technologie de drones de nouvelle génération appliquée à l'UAS-S45".
2. Gurrola Arrieta, M. J., Botez, R., 2023, "In-House High-Fidelity Simulation Model for Aircraft Engines".
3. Gurrola Arrieta, M. J., Botez, R., 2023, "Modèle de simulation haute-fidélité pour moteurs d'avion".
4. Botez, R. M., 2022, "Réduire l'impact environnemental des avions".
5. Bashir, M., Longtin-Martel, S., Botez, R., Wong, T., 2022, "Nouvelles technologies d'aile déformable pour les drones de l'avenir".
6. Bashir, M., Longtin-Martel, S., Botez, R., Wong, T., 2021, "Morphing Application to the UAS-S45 Drone for Aerodynamic Performance".
7. Bashir, M., Longtin-Martel, S., Botez, R., Wong, T., 2021, "Un drone à ailes déformables pour augmenter l'aérodynamisme".
8. Dăncilă, R. I., Botez, R., 2020, "Nouveau modèle atmosphérique pour l'optimisation des trajectoires de vol".
9. Dăncilă, R. I., Botez, R., 2020, "New Atmospheric Data Model for Flight Trajectory Optimization".
10. Ghazi, G., Maniette, N., Botez, R., 2020, "Des trajectoires de décollage qui réduisent l'impact environnemental".
11. Ghazi, G., Maniette, N., Botez, R., 2020, "Takeoff Trajectories to Reduce Environmental Impacts".
12. Khan, S., Botez, R., Grigorie, L. T., 2020, "Un actionneur d'aile déformable novateur grâce à l'IA".
13. Khan, S., Botez, R., Grigorie, L. T., 2020, "Artificial Intelligence Methods for a Novel Morphing Wing Actuator".
14. Communier, D., Botez, R., Wong, T., 2019, "Analyse d'un nouveau système de bord de fuite déformable".
15. Communier, D., Botez, R., Wong, T., 2019, "Analyzing a New Morphing Trailing Edge System".
16. Kuitche, M., Botez, R. M., 2019, "Améliorer les performances des drones en utilisant des simulateurs de vol".
17. Kuitche, M., Botez, R. M., 2019, "Improving Drone Performance using Flight Simulators".
18. Segui, M., Thompson, E., Botez, R., 2018, "Aerodynamic Modeling of the World's Fastest Business Jet".
19. Segui, M., Thompson, E., Botez, R., 2018, "Modélisation aérodynamique du jet d'affaire le plus rapide du monde".
20. Segui, M., Ghazi, G., Mantilla, M., Bezin, S., Botez, R., 2018, "Morphing Wing Technology – For the Future of Aviation".
21. Segui, M., Ghazi, G., Mantilla, M., Bezin, S., Botez, R., 2018, "L'aile deformable: une technologie d'avenir pour l'aviation".
22. Segui, M., Mantilla, M., Botez, R., 2018, "Original Methods for finding a Wing Shape Airfoil".
23. Segui, M., Mantilla, M., Botez, R., 2018, "Méthodes originales pour déterminer la forme d'un profil d'aile".
24. Bardela, P. A., Pageaud, P., Botez, R., 2018, "Validation d'un modèle pour le compresseur d'un moteur Cessna".
25. Bardela, P. A., Pageaud, P., Botez, R., 2018, "Validation of a Cessna Engine Compressor Model".
26. Murrieta-Mendoza, A., Beuze, B., Ternisien, L., Botez, R., 2017, "Search Algorithm to Optimize Vertical Reference Trajectories".

27. Murrieta-Mendoza, A., Beuze, B., Ternisien, L., Botez, R., 2017, "L'algorithme de recherche en faisceau pour optimiser les trajectoires".
28. André, T., Communier, D., Flores Salinas, M., Botez, R., Carranza Moyao, O., Wong, T., Gauthier, G., 2017, "Mesure de l'influence d'un aileron sur le comportement aérodynamique en soufflerie".
29. André, T., Communier, D., Flores Salinas, M., Botez, R., Carranza Moyao, O., Wong, T., Gauthier, G., 2017, "Measuring Impact of an Aileron on Aerodynamic Behaviour in a Wind Tunnel".
30. Machetto, A., Communier, D., Botez, R., Carranza Moyao, O., Wong, T., 2017, "Automatisation du changement d'angle d'une aile dans la soufflerie Price – Païdoussis du LARCASE".
31. Machetto, A., Communier, D., Botez, R., Carranza Moyao, O., Wong, T., 2017, "Automating Wing Angle Changes inside the LARCASE Price – Païdoussis Wind Tunnel".
32. Botez, R. M., 2017, "ICAO's Efforts to Reduce GHG Emissions".
33. Botez, R. M., 2017, "Les démarches de l'OACI pour réduire les émissions de GES".
34. Botez, R. M., 2017, "Trois projets de recherche pour aider l'OACI à réduire ses émissions de gaz à effet de serre GES".
35. Botez, R. M., 2017, "Three Research Projects to help ICAO to reduce Greenhouse Gas Emissions".
36. Tchatchueng Kammegne, M.J., Grigorie, L.T., Botez, R.M., 2016, "Real-Time Testing of a Morphing Wing Model in a Wind Tunnel".
37. Tchatchueng Kammegne, M.J., Grigorie, L.T., Botez, R.M., 2016, "Tests en temps réel d'un démonstrateur d'aile déformable en soufflerie".
38. Murrieta Mendoza, A., Botez, R., 2016, "Fuel Consumption Computation to optimize the Trajectory of Aircraft".
39. Murrieta Mendoza, A., Botez, R., 2016, "Calculer la consommation de carburant pour optimiser la trajectoire de vol".
40. Tchatchueng Kammegne, M.J., Grigorie, L.T., Botez, R.M., 2016, "Morphing Wing Design to reduce Airplane Fuel Consumption".
41. Tchatchueng Kammegne, M.J., Grigorie, L.T., Botez, R.M., 2016, "Une aile déformable d'avion pour réduire la consommation de carburant".
42. Murrieta Mendoza, A., Botez, R., 2016, "Dijsktra's Algorithm to optimize Flight Trajectories".
43. Murrieta Mendoza, A., Botez, R., 2016, "L'algorithme de Dijkstra pour optimiser les trajectoires de vol".
44. Felix Patron, R. S., Botez, R., 2015, "How to make Fuel-Efficient Trajectories to reduce Aircraft CO2 Emissions".
45. Felix Patron, R., Botez, R., 2015, "Comment réduire les émissions de CO2 des avions".
46. Berrou, Y., Felix Patron, R.S., Botez, R., 2015, "How to optimize Aircraft Flight Path to reduce their CO2 Emissions!"
47. Berrou, Y., Felix Patron, R.S., Botez, R., 2015, "Comment optimiser la trajectoire de vol dea avions pour réduire leurs émissions de CO2!"
48. Murrieta Mendoza, A., Botez, R., 2014, "Réduire les émissions de CO2 des avions commerciaux".
49. Murrieta Mendoza, A., Botez, R., 2014, "Reducing CO2 emissions of commercial aircrafts".
50. Dăncilă, R. I., Botez, R., Ford, S., 2014, "Missed Approaches and rejected Landings - Economic and Environmental Impact".
51. Dăncilă, B., Botez, R., 2014, "New FMS Algorithm for predicting Aircraft's Level-Flight Fuel Burn".
52. Dăncilă, B., Botez, R., 2014, "Nouvel algorithme pour prédire la consommation d'essence d'un avion en vol".

6.1.7 Invited Plenary and Speaker at various events (57)

1. *Invited Panel Speaker,* 2024, "Design Concepts for a Flight Simulator of an Unmanned Aerial System (UAS) from Hydra Technologies", International Symposium on Unmanned Systems: AI, Design & Efficiency, Baku, Azerbaijan, May 22-24.
2. *Invited Panel Speaker,* 2024, "Disruptive Technologies in Sustainable Aviation", AIAA Aviation Forum & Exposition, Las Vegas, USA, July 29th-August 2nd.
3. *Keynote Speaker*, 2024, "Research Activities at the Laboratory of Active Controls in Active Controls, Avionics and AeroServoElasticity LARCASE", Invited Students Conference at the "Giordano Bruno" Highschool, Budrio (proche de Bologna), Italy
4. *Invited Panel Speaker,* 2023, "Canadian American Research Collaborations", Academic Panel (US and Canadian universities) Meeting, The Great Lakes Aviation and Space Technology Alliance (GLASTA) Symposium, Cleveland, OH., USA, October 11-12.
5. *Keynote Speaker*, 2023, "Morphing Green Aircraft Design Technologies for Fuel Consumption Reduction", 3rd International Conference on Aerospace, Mechanical, & Mechatronics Engineering ICAMME-2023, Dubai, UAE, June 21-23.
6. *Keynote Invited Speaker*, 2023, "Methodologies for Morphing Unmanned Aerial Systems Performance Improvement", 10th International Conference on Recent Advances in Air and Space Technologies RAST 2023, Istanbul, Turkey, June 7-9.
7. *Keynote Invited Speaker*, 2023, "Presentation of the Applied Research Laboratory in Active Controls, Avionics and AeroServoElasticity LARCASE", Smart Diaspora 2023, Timisoara, Romania, April 10-13.
8. *Keynote Speaker*, 2022, "Morphing Design Aspects for Business Aircraft for Fuel Consumption Reduction", International Symposium on Sustainable Aviation ISSA, RMIT University, Melbourne, Australia (Virtual Event), August 3-5.
9. *Invited Speaker*, 2022, "Applications of Artificial Intelligence in Aircraft Modeling, Simulation and Controls at the LARCASE Laboratory at ÉTS", Forum Mobilit.AI, Québec, Canada, May 17-19.
10. *Invited Speaker*, 2021, "Research Activities at the LARCASE", Avis de recherche conference, ÉTS, Montreal, Canada, November 3.
11. *Keynote Speaker*, 2021, "Morphing Wing and Morphing Wing Tip Design for Flow Transition Delay", International Symposium on Electric Aircraft & Autonomous Systems ISEAS-2021, Eskisehir Technical University, Eskisehir, Turkey, December 16-18.
12. *Plenary Speaker*, 2021, "Prediction of a Flight Dynamics Model for the Unmanned Aerial System UAS-S4 from Hydra Technology", The 39th “Caius Iacob” Conference on Fluid Mechanics and its Technical Applications, Bucharest, Romania, October 28-29.
13. *Keynote Speaker*, 2021, "Optimisation of an Adaptive Wing Systems", International Conference on Adaptive Structures and Technologies ICAST-2021, ETH Zurich, Switzerland, October 5-8.
14. *Workshop Invited Speaker*, "Future of Space Engineering" - Workshop Aerospace Engineering", The 18th Edition of the International Multi-Conference on Systems Signals and Devices (SSD). This virtual workshop took place as activity within the German-Tunisian PRASEE, which is promoting modernization of education and practice orientation in engineering studies, Tunis, March 22.
15. *Invited Speaker*, 2021, "Flight Dynamics Analysis Studies for Unmanned Aerial Systems UAS-S4 and UAS-S45 from Hydra Technologies", The Virtual 14th International Conference on Advanced Computational Engineering and Experimenting ACEX-2021, Malta, July 4-8.
16. *Plenary Speaker*, 2020, "Artificial Neural Networks New Methodology Application for Aerodynamic Coefficients Calculations for Airfoil Shape Design", The 9th Edition of the International Conference of Aerospace Science, Bucharest, Romania, October 15-16.
17. *Keynote Speaker*, 2019, "Morphing Horizontal Tail Airfoil Design for the Cessna Citation X Business Aircraft Modeling", The 38th Caius Iacob Conference on Fluid Mechanics and its Technical Applications, Bucharest, Romania, November 7-8.

18. *Keynote Speaker*, 2019, "A Morphing Wing Application with a Full-Scaled Portion of a Real Wing", The 9th International Conference & Workshop Energy Reliability REMOO 2019, Hong Kong, April 16-18.
19. *Keynote Speaker*, 2019, "Adaptive Wing Design Novel Multidisciplinary Methodologies", XXV International Congress of the Italian Association of Aeronautics and Astronautics, Roma, Italy, September 9-12.
20. *Keynote Speaker*, 2019, "Aircraft Modeling and Simulation Technologies using Morphing Winglets", The 7th International Workshop on Numerical Modelling in Aerospace Science NMAS Conference, Bucharest, Romania, May 15-16.
21. *Keynote Speaker*, 2019, "Wind Tunnel Testing of a Morphing Wing Experimental Model for a Regional Aircraft", The Tandem Aero-Days Conference, Bucharest, Romania, May 27-30.
22. *Keynote Speaker*, 2019, "Structural Modeling for Morphing Wings", The 26th Assembly of Advanced Material Congress IAAM, Stockholm, Sweden, June 10-13.
23. *Keynote Speaker*, 2019, "Fuzzy Logic Modified Methodology Application in a Green Aircraft Technology", The 30th European Conference on Aerospace Research EURO-2019, Dublin, Ireland, June 23-26.
24. *Keynote Speaker*, 2019, "Experiments on a Morphing Wing Model for a Full Scaled Portion of a Real Wing", The 21st Edition of the International Conference on Scientific Research and Education in the Air Frce AFASES 2019, Brașov, May 31 – June 2.
25. *Keynote Speaker*, 2019, "Novel Control Technologies for a Morphing Wing Tip", The 2nd Aerospace and Aeronautical Engineering Conference, Frankfurt, Germany, February 18-19.
26. *Keynote Speaker*, 2018, "Green Aircraft Minimum Fuel Consumption Methodologies", GLObal and Regional Environmental Protection – GLOREP 2018**,** Timișoara, Romania, November 15-17.
27. *Invited Speaker*, 2018, "Green Aircraft Modeling and Simulation based on Flight Tests", Technion – Israel Institute of Technology, Haifa, Israel, November 5.
28. *Plenary Speaker*, 2018, "Various Wing Morphing Technologies Simulation and Experimental Tests Research", The International Conference of Aerospace Sciences AEROSPATIAL 2018*,* INCAS, Bucharest, Romania, October 25-26.
29. *Invited Speaker*, 2018, "Romanian Aces during the two World Wars", The 100 Years of Aviation in Romania Conference, Romanian Academy, Bucharest, Romania, October 24.
30. *Keynote Speaker*, 2018, "Présentation de la gestion des projets académiques au LARCASE à l'ÉTS", PMI, Montreal Section, Communauté de Pratique Aéronautique et Transport aérien du PMI-Montréal, Que., Canada, September 12.
31. *Invited Speaker*, 2018, "Optimized Neural Network Applications for Aircraft Engine Modeling", The 29th European Conference on Operational Research EURO-2018, Valencia, Spain, July 8-11.
32. *Invited Speaker*, 2018, "Adaptive Neuro-Fuzzy Inference System Application for the Design and Experimental Validation of Morphing Wing Tip", The 8th International Conference & Workshop REMOO Energy 2018, Venice, Italy, May 29-31.
33. *Invited Speaker*, 2018, "Aero-Propulsive Engine Modelling based on Flight Test Data", The 42nd American Romanian Academy of Arts and Science ARA Congress: ARA at the Great Union Centenary, Cluj, Romania, May 19-25.
34. *Invited Speaker*, 2018, "Mihai and Alexandru Ciucă Brothers – Romanian Scientists", The 42nd American Romanian Academy of Arts and Science ARA Congress: ARA at the Great Union Centenary, Cluj, Romania, May 19-25.
35. *Keynote Speaker*, 2018, "Simulation Model of the Unmanned Aerial Systems UAS-S4 Ehecatl and UAS-S45 Báalam", The 6th International Workshop on Numerical Modelling in Aerospace Sciences NMAS 2018, Bucharest, Romania, May 16-17.
36. *Invited Speaker*, 2018, "Identification and Validation Methodologies of an Aero-Propulsive Engine Model from Flight Tests", The 12th International Conference on Advanced Computational Engineering and Experimenting ACE-X 2018, Amsterdam, Netherlands, July 1-5.

37. *Invited Speaker*, 2018, "Morphing Wing Technologies Aero-Structural Interactions Studies", The BIT's 4th Annual World Congress of Smart Materials – 2018 on the Theme: Weaving an Avatar Dream Together" WCSM-2018, Osaka, Japan, March 6-8.
38. *Invited Speaker*, 2017, "Aircraft Computational and Experimental Flight Trajectories Optimization", The 10th International Conference on Advanced Computational Engineering and Experimenting ACE-X2017, Viena, Austria, July 3-6.
39. *Plenary Speaker*, 2017, "New Methodologies Validations with Experimental Tests for Aircraft Components and Energy Applications", The 7th International Conference & Workshop REMOO-2017, Venice, Italy, May 10-12.
40. *Plenary Speaker*, 2016, "New Methodologies for Green Aircraft Flight Trajectories Optimization", The ESTACA's International Week, Plenary Green Transportation Session, Paris, France, November 14-16.
41. *Invited Speaker*, 2016, "Innovative Wing Tip Equipped with Morphing Upper Surface and Morphing Aileron", The Greener Aviation 2016 Conference, Brussels, Belgium, October 11-13.
42. *Invited Keynote Speaker*, 2016, "Finite Elements Methods Utilization in Morphing Wing Tip Technologies", The Aerospace Engineering Analysis & Simulation: NAFEMS Event, Montreal, Que., Canada, October 4.
43. *Invited Keynote Speaker*, 2016, "New Methodologies for Missed Approach Computing in terms of Fuel Consumption and Emissions for a Boeing B-737-400", The International Conference of Aerospace Sciences "AEROSPATIAL 2016", Bucharest, Romania, October 26-27.
44. *Plenary Speaker* at the "Round Table on the Canadian-Romanian Research Collaborations", 2016, The Academic Forum at the 40th American Romanian Academy of Arts and Sciences ARA, Montreal, Que., Canada, July 28-31.
45. *Keynote Speaker*, 2016, "Advances in Aircraft Modeling and Simulation Methodologies", The 40th American Romanian Academy of Arts and Sciences ARA, Montreal, Que., Canada, July 28-31.
46. *Invited Speaker*, 2016, "Aircraft Computational and Experimental Advanced Methodologies", The 10th International Conference on Advanced Computational Engineering and Experimenting ACE-X 2016, Split, Croatia, July 3-6.
47. *Keynote Speaker*, 2016, "Modeling and Simulation for Environmentally Better Aircraft", CMC Electronics Professional Event, Montreal, Que., Canada, May 30.
48. *Keynote Speaker*, 2016, "Multidisciplinary Modelling, Simulation and Experimental Methods applied to Aerodynamics, Materials, and Active Controls Issues", The 6th International Conference & Workshop REMOO-2016, Budva, Montenegro, May 18-20.
49. *Keynote Speaker*, 2016, "Methodologies for Identification of an Aero-Propulsive Engine Model from Flight Tests", 4th International Workshop on Numerical Modelling in Aerospace Sciences, NMAS 2016, Bucharest, Romania, May 11-12.
50. *Invited Speaker*, 2016, "Modeling, Simulation and Wind Tunnel Testing of Aircraft Trajectory Optimization and Morphing Wing Aircraft", NASA Ames Research Center, San Jose, CA, USA, October 15.
51. *Plenary Speaker*, 2015, "UAV Sustainability", The 62nd Canadian Aeronautical Space Institute CASI Aeronautics and AGM 3rd GARDN Conference, Montreal, Que., Canada, May 19-21.
52. *Keynote Speaker*, 2015, "Level D Research Aircraft Flight Simulator use for Novel Methodologies in Aircraft Modeling and Simulation", The 2nd International Workshop on Numerical Modeling in Aerospace Sciences "NMAS 2015", Bucharest, Romania, May 6-7.
53. *Keynote Speaker*, 2014, "Increase of Aerodynamic Performance of a Wing-Tip Design", The International Conference of Aerospace Institute for Aerospace Research Elie Carafoli INCAS "AEROSPATIAL 2014", Bucharest, Romania, September 18-19.

54. *Invited Speaker*, 2012, "Research performed at the Laboratory of Applied Research in Active Controls, Avionics and AeroServoElasticity", University of Clarkson, Mechanical and Aeronautical Engineering Department, Clarkson, NY, USA, October 24.
55. *Keynote Speaker*, 2012, "Morphing Wing Laminar Flow Improvement", The International Conference of Aerospace Institute for Aerospace Research Elie Carafoli INCAS "AEROSPATIAL 2012", Bucharest, Romania, October 11-12.
56. *Plenary Speaker*, 2014, "Aerospace Engineering Women", The “Woman Leadership” Workshop at the CSME International Congress, Ottawa, Ont., Canada, June 1.
57. *Invited Guest Speaker and Moderator*, 2008, "Avionics Session", The International Aerospace Innovation Forum, Montreal, Que., Canada.

6.1.8 Licenses (1)

License: "Damage Detection in Concrete Structures Using Aerial UAV Photographs and Convolutional Neural Networks" (In Portughese: "Detecção de Danos em Estruturas de Concreto Usando Fotografias Aéreas de VANT e Redes Neurais Convolucionais"). This license was granted in July 2024 (it was written in January 2024). Prof. Botez is one of the authors of the "Certificate of Registration of a Computer Program in Python" valid for 50 years. This Certificate is written in Portuguese, and it was granted by the "Brazilian National Institute of Industrial Property (INPI)". The main author is Mr Bruno Soares Do Santos and the other collaborators are Prof. Douglas Domingues Bueno, Rodrigo Borges Santos, Carlos Roberto Dos Santos Jr., Renan Sanches Geronel.

6.2 Selected Master and PhD research 86 theses written by students under the supervision and co-supervision of Prof Botez – Please also see the website of ÉTS of most of these publications

Dr Botez was the supervisor at ÉTS for a total of 54 Master’s in Engineering students and 23 PhD students for **their theses**, and she was the co-supervisor of 11 Master’s in Engineering students & 6 PhD students.

1. Tondji, Y. W., 2024, "Advanced Machine Learning Approaches for Aircraft Aerodynamic and Flight Dynamics Modeling: A Study on CRJ-700 and Cessna Citation X", *Excellent* PhD thesis, ÉTS.
2. De Jesus Gurrola, M., 2024, "CF34-8C5B1 Engine Deterioration Model to Assess the Impact in Fuel Consumption of the CRJ-700 Aircraft Flight Mission", *Excellent* PhD thesis, ÉTS.
3. Durand, A., 2024, "Développement de modèles dérivés de la théorie des graphes pour l’optimisation des trajectoires au sol des avions", *Excellent* Master’s in Engineering thesis, ÉTS.
4. Karakilic, E., 2024, "Aircraft and Airlines Efficiencies in terms of Energy and Sustainability by use of Flight Trajectories Optimization", Master’s in Engineering thesis, Eskisehir Technical University, Turkey.
5. Tarhan, B., 2024, "Battery Management System (BMS) Modeling and Simulation based on Experimental Results Large Data using New Artificial Intelligence Methodologies", PhD thesis, Eskisehir Technical University, Turkey.
6. Gunaltili, E., 2024, "Hybridization, Modeling and Optimization of a Gas Turbine Engine with Various Fuel Cell Types for Aircraft Propulsion and Power Systems", PhD thesis, Necmettin Erbakan University, Turkey
7. Dos Santos, B. S., 2024, "Development of a Damage Detection Technique for Concrete Structures based on Aerial Photographs obtained by use of an UAV", Master’s in Engineering thesis, UNESP, Brazil.
8. Flores Salinas, M., 2023, "Wind Tunnel Tests and Fluid Dynamics Analyses of Wake Flows Near Blunt and Streamlined Bodies Models at high Reynolds numbers", *Excellent* PhD thesis, ÉTS.

9. Geronel, R. S., 2023, "Dynamics and Vibration Analysis of a Quadrotor type UAV with a Payload: Insights for Aerial Medical Product Transportation", PhD thesis, UNESP, Brazil.
10. Bashir, M., 2023, "Aerodynamic Design Optimization and Flow Separation Control of the UAS-S45 using Wing Morphing Technology", *Excellent* PhD thesis, ÉTS.
11. Hashemi, S. M., 2022, "Novel Trajectory Prediction and Flight Dynamics Modelling and Control based on Robust Artificial Algorithms", PhD thesis, ÉTS.
12. Zonzini, N., 2022, "Unsteady CFD Analysis of a Variable Morphing Leading Edge to control the Dynamic Stall", Master's in Engineering thesis, University of Bologna, Italy.
13. Pecorella, D., 2022, "Design Methodology and Optimization of a Morphing Wing Droop-Nose Structure for Greener Aircraft", Master's in Engineering thesis, University of Bologna, Italy.
14. van Iersel, Q. G., 2022, "Machine Learning Methodologies and Results for Trajectories Optimization", Master's in Engineering thesis, Amsterdam University of Applied Science, Netherlands.
15. Stepan, A., 2022, "Développement d'un modèle de performance aéro-propulsive en vol de croisière – Application sur un avion Cessna Citation", Master's in Engineering thesis, ÉTS.
16. Elelwi, M., 2022, "New Concept of Multidisciplinary Optimization for Weight Saving and Stiffness Improvement of a Morphing Variable Span of Tapered Wing MVSTW - Application to the UAS-S4", PhD thesis, ÉTS.
17. Longtin Martel, S., 2022, "Optimisation et simulation de l'aile de l'UAS-S45 de Hydra Technologies, ainsi que le développement du simulateur de vol du Raptor de Tristar Multicopters", Master's in Engineering thesis, ÉTS.
18. Segui, M., 2022, CRJ-700 Regional Aircraft Performances Optimization using Adaptive Winglet Systems, PhD thesis, ÉTS.
19. Meyran, P., 2021, "Conception d'une ailette adaptative pour une optimisation des performances aérodynamiques d'un avion de transport régional", *Excellent* Master's in Engineering thesis, ÉTS.
20. Andrianantara, R. P., 201, "Modélisation des performances du moteur General Electric CF34-8C5B1 de l'avion CRJ-700 à partir des réseaux de neurones et des tests en vol", Excellent Master's in Engineering thesis, ÉTS.
21. Dăncilă, R., 2020, "Aircraft Trajectory Optimization for a Cruise Segment with Imposed Flight Time Constraints", PhD thesis, ÉTS.
22. Ghazi, G., 2020, "Identification and Validation of an Aircraft Performance Model for the Study of Flight Trajectories of the Cessna Citation X", *Excellent* PhD thesis, ÉTS.
23. Communier, D., 2020, "Design and Wind Tunnel Testing of a New Concept of Wing Morphing Camber System", PhD thesis, ÉTS.
24. Kuitche, M. A., 2020, "Novel Modeling Technology for UAS-S4 and UAS-S45 Flight Dynamics", *Excellent* PhD thesis, ÉTS.
25. Verdier, F., 2020, "Développement d'une méthodologie d'optimisation du profil d'aile de l'UAS-S45", Master's in Engineering thesis, ÉTS.
26. Khan, S., 2020, "Design and Development of Intelligent Actuator Control Methodologies for Morphing Wing in Wind Tunnel", PhD thesis, ÉTS.
27. Abid, K., 2020, "New Algorithms for optimizing Aircraft Performance during Cruise", Master's in Engineering thesis, ÉTS.
28. Badillo, H., Y., 2019, "New Control Methodologies for the UAS-S45", PhD thesis, Universidad Politécnica de Tulancingo, Hidalgo, Mexico.
29. Abel, F., 2019, "Modeling and Simulation Technologies for the Bombardier CRJ-700 Aircraft", Master's in Engineering thesis, University of Bologna, Italy
30. Rogoli, V., 2019, "Optimization of the Cessna Citation X Performance using the Application of a Morphing Wing on the Horizontal Tail", Master's in Engineering thesis, University of Bologna, Italy
31. Segui, M., 2018, "Mesure de l'impact de la technologie d'aile déformable sur les performances en croisière de l'avion d'affaire Cessna Citation X", Master's in Engineering thesis, ÉTS.

32. Dăncilă, B. D., 2017, "New methods aiming to improve the performances of aircraft flight trajectory optimization algorithms", *Excellent* PhD thesis, ÉTS.
33. Aubeelack, H., 2017, "Aerodynamic Improvement Methods for a Medium Altitude Long Endurance UAV Wing", Master's in Engineering thesis, ÉTS.
34. Nguyen, D. H., 2017, "Development and Validation of Control Methods for an Actuation System in a Morphing Wing and Aileron System", Master's in Engineering thesis, ÉTS.
35. Zaag, M., 2017, "Identification des paramètres du moteur de l'avion Cessna Citation X pour la phase de croisière à partir des tests en vol et à base des réseaux de neurones", Master's in Engineering thesis, ÉTS.
36. Boughari, Y., 2017, "Flight Control Optimization from Design to Assessment Application on the Cessna Citation X Business Aircraft", PhD thesis, ÉTS.
37. Ruby, M., 2017, "Optimization of Vertical Trajectories by the Harmony Research Method", Master's in Engineering thesis, ÉTS.
38. Mosbah, A. B., 2017, "New Methodologies for Calculation of Flight Parameters on Reduced Scale Wings Models in Wind Tunnel", PhD thesis, ÉTS.
39. Tudor, M., 2017, "Aero-Propulsive Model Design from a Commercial Aircraft in Climb and Cruise Regime using a Performance Database", Master's in Engineering thesis, ÉTS.
40. Tondji Chendjou, Y. W., 2016, "Morphing Wing: Experimental Boundary Layer Transition Determination and Wing Vibrations Measurements and Analysis", Master's in Engineering thesis, ÉTS.
41. Murrieta-Mendoza, A., 2017, "Application of Metaheuristic and Deterministic Algorithms for Aircraft Reference Trajectory Optimization", *Excellent* PhD Thesis (proposed for *Award*), ÉTS.
42. Bardela, P.A., 2017, "Identification and Validation of a Mathematical Model of the Cessna Citation X Business Aircraft by Flight Tests", *Excellent* Master's in Engineering thesis, ÉTS.
43. Beulze, B., 2017, "Development of a Mathematical Model allowing the Generation of Performance Data for a Flight Management System", *Excellent* Master's in Engineering thesis, ÉTS.
44. Koreanschi, A., 2016, "Numerical and Experimental Validation of the Optimization Methodologies for a Wing-Tip Structure equipped with Conventional and Morphing Ailerons", *Excellent* PhD thesis, ÉTS.
45. Tchatchueng, Kammegne, M.J., 2016, "Design, Development and Tests in Real Time of Control Methodologies for a Morphing Wing in Wind Tunnel", PhD thesis, ÉTS.
46. Guezguez Sadok, M., 2016, "Morphing Wing System Integration with Wind Tunnel Testing", *Excellent* Master's in Engineering thesis, ÉTS.
47. Vincent, J. B., 2015, "Aile adaptable: design du système d'actionnement de l'aileron rigide, caractérisation des capteurs de pression et instrumentation pour des tests statiques", *Excellent* Master's in Engineering thesis, ÉTS.
48. Șugar Gabor, O., 2015, "Validation of Morphing Wing Methodologies on an Unmanned Aerial System and a Wind Tunnel Technology Demonstrator", *Excellent* PhD Thesis, ÉTS.
49. Communier, D., 2015, "Méthodologie de modélisation aéro-structurelle d'une aile utilisant un logiciel de calcul aérodynamique et un logiciel de calcul par éléments finis", Master's in Engineering thesis, ÉTS.
50. Flores Salinas, M., 2015, "Méthodologies nouvelles pour la réalisation d'essais dans la soufflerie Price-Païdoussis", Master's in Engineering thesis, ÉTS.
51. Leuca, M., 2015, "Développement et implémentation d'une méthode pour résoudre les équations de la couche limite laminaire et turbulente", Master's in Engineering thesis, ÉTS.
52. Chahbani, S., 2015, "Estimation des masses, des centres de gravité ainsi que des moments d'inertie de l'Avion Cessna Citation X", Master's in Engineering thesis, ÉTS.
53. Sidibé, S., 2014, "Optimisation of Trajectories for a Flight Management System for the Cost Reduction", Master's in Engineering thesis, ÉTS.
54. Félix Patrón, R.S., 2014, "Optimization of the Vertical Flight Profile on the Flight Management System for Green Aircraft", *Excellent* PhD thesis, ÉTS.

55. Hamel, C., 2014, "Identification d'un modèle global linéarisé de la dynamique de vol du Cessna Citation X à partir d'essais en vol", Master's in Engineering thesis, ÉTS.
56. Ghazi, G., 2014, "Development of a Simulation Platform and an Automatic Pilot for the Business Aircraft", *Excellent* Master's in Engineering thesis, ÉTS.
57. Michaud, F., 2014, "Conception et optimisation d'une peau en composite pour une aile adaptative", Master's in Engineering thesis, ÉTS.
58. Murrieta Mendoza, A., 2013, "Vertical and Lateral Flight Optimization Algorithm and Missed Approach Cost Calculation", Master's in Engineering thesis, ÉTS.
59. Anton, N., 2013, "Theoretical and Numerical Methods used as Design Tool for an aircraft: application on three real world configurations", PhD thesis, ÉTS.
60. Brossard, J., 2013, "New Methods of Closed Loop Control on a Morphing Wing", Master's in Engineering Thesis, ÉTS.
61. Dăncilă, R.I., 2013, "Optimization Algorithm of a Vertical Profile for a Cruise Segment with a Time Arrival Constraint", Master's in Engineering thesis, ÉTS.
62. Saafi, K., 2012, "Improvement of Flaps Implementation in a Flight Dynamics Model for an Aircraft", Master's in Aerospace Engineering thesis, ÉTS.
63. Dăncilă, B. D., 2012, "Altitude Optimization Algorithm for Cruise, Constant Speed and Level Flight Segments", Master's in Engineering thesis, ÉTS.
64. Gagné, J., 2012, "New Method of Cost Optimisation by use of an FMS and its Validation on the Lockheed L-1011 TRISTAR", Master's in Engineering thesis, ÉTS.
65. Pollender-Moreau, O., 2011, "Practical Method between a Conceptual Aerodynamical Technique and a Simulation Platform of an Automatic Pilot with Optimal Control for the Flight Enveloppe of a Business Aircraft", Master's in Aerospace Engineering thesis, ÉTS.
66. Brisemeur, R., 2011, "Application of Genetical Algorithms in the Management of Aerial Conflicts in the Cruise Regime", *Excellent* Master's in Engineering thesis, ÉTS.
67. Boëly, N., 2011, "Nonlinear Modeling and Linear Feeback Input – Output Control Linearized of an Underwater Unmanned Vehicle", Master's in Engineering thesis, ÉTS.
68. Fays, J., 2011, "Trajectory Creation and Following in 4D with No-Fly Zones Self-Management and Calculation of Outputs with Pilot Aids", Master's in Engineering thesis, ÉTS.
69. Kouba, G., 2011, "Trajectories Calculations with Genetic Algorithms on Three Dimensions for an Aircraft in Six Dimensions", Master's in Engineering thesis, ÉTS.
70. Popov, A. V., 2010, "Design of an Active Controller for Delaying the Transition from Laminar to Turbulent Flow over a Morphing Wing in a Wind Tunnel", PhD thesis, ÉTS.
71. Popescu, D., 2010, "New Implementation of Datcom Procedure for Aerodynamic Coefficients Calculations and Stability Derivatives in the Flight Subsonic Regime", *Excellent* Master 's in Engineering thesis, ÉTS.
72. Bîrlă, L., 2008, "Calculation of Aerodynamic Coefficients on a Flexible Wing Using Fluent and XFoil Codes", Master's in Engineering thesis, ÉTS.
73. De Jesus Mota, S., 2008, "Identification and Validation of a Model of the Bell-427 Helicopter from Flight Test Data with a Time Domain Method", *Excellent* Master's in Engineering thesis, ÉTS.
74. Labib, M., 2008, "Active Flow Control on an Aeroelastic Wing", *Excellent* Master's in Engineering thesis, ÉTS.
75. Nadeau Beaulieu, M., 2007, "Formulation of Mathematical Models using Parameter Estimation Techniques and Flight Test Data for the Bell-427 Helicopter and the F/A-18 Active Aeroelastic Wing Research Aircraft", PhD thesis, ÉTS.
76. Biskri, D.E., 2007, "Aerodynamic Force Approximation Methods for the Aeroservoelastic Interactions Studies", PhD thesis, ÉTS.
77. Rotaru, M., 2006, "Flying Qualities of an F/A-18 Aircraft", Master in Engineering thesis, ÉTS.
78. Dinu, A.D., 2006, "New methods for Aeroservoelastic Interaction Studies in Open Loop on F/A-18, CL-608, ATM (Aircraft Test Model) and in Closed Loop on the ATM", PhD thesis, École Polytechnique.

79. Ciocan, L., 2006, "Validation of a Method for Aeroservoelastic Interaction Studies of Rigid, Control and Elastic Modes on an F/A-18 Aircraft", Master's in Engineering thesis, ÉTS.
80. Jalali, M., 2005, "Load Calculations on an Aircraft Wing", Master in Engineering thesis, ÉTS.
81. Popov, A. V., 2005, "Proof of Match Technique for Bell 427 Helicopter Level D Simulator", Master's in Engineering thesis, ÉTS.
82. Benea, C., 2005, "Method of Aerodynamic Forces Analysis for Aeroservoelastic Interaction Studies on F/A-18", Master's in Engineering thesis, ÉTS.
83. Lefebvre, M., 2005, "Method of Analysis of Aerodynamic Forces for Aeroservoelastic Interaction Studies on F/A-18 and CL-604 Aircraft", Master's in Engineering thesis, ÉTS.
84. Bunduc, L., 2005, "Aerodynamic Forces Calculations in the Laplace Domain for the F/A-18 Aircraft", Master's in Engineering thesis, ÉTS.
85. Crișan, E.G., 2005, "Validation of a Mathematical Model for the Bell-427 Helicopter Using Parameter Estimation Techniques and Flight Test Data", Master's in Engineering thesis, ÉTS.
86. Herda, M., 2005, "Conversion of Aerodynamic Forces from Frequency to Laplace Domain", Master's in Engineering thesis, ÉTS.
87. Popa, G., 2004, "Studies of Aeroservoelastic Interactions for the Dynamics of Whole Aircraft Test Model ATM (Longitudinal and Lateral) in STARS", Master's in Engineering thesis, ÉTS.
88. Karnib, Y., 2004, "Stability Derivatives Calculations for Aeroservoelastic Interactions Studies", Master's in Engineering thesis, ÉTS.
89. Hamza, D., 2003, "Simulation de la conversion des forces aérodynamiques pour l'avion à commande électrique Fly-By-Wire", Master's in Engineering thesis, ÉTS.
90. Saoud, O., 2003, "Conception d'une loi de commande robuste de la pression dans un réservoir pneumatique à l'aide d'une formulation IML", Master's in Engineering thesis, ÉTS.

6.3 Details regarding citations of publications of Dr Botez

Mrs Judith Boissonneault from ÉTS Library has evaluated in 2021 the impact of Dr Botez' publications in **Engineering, Aerospace in the time period 2011-2020,** which included "resources concerned with astronautics, aeronautics, aerospace and aviation. Topics covered include the design and construction of aircraft, space vehicles, missiles, satellites, instrumentation, and power units, as well as launch, flight, and guidance of crafts in the earth's atmosphere or in space. Mrs Boissonneault has done an analysis according to research subjects based on the controlled vocabulary of the Engineering Village tool (Compendex, Inspec, GeoRef, GEOBASE, EnCompass databases), and exported from the Scopus database in 2021.

The controlled vocabularies or thesaurus were used to normalize the indexing of articles, and to favorise the precision and tracking of documents. The results expressed in terms of research subjects were found in titles, keywords and summaries of articles. These results were filtered for the aerospace field.

Therefore, Dr Botez' research has been positioned on August 20th, 2021, by taking into consideration the **number of publications** in Canada, Romania and in the world during **2011-2020:**

Aircraft Optimization
- Worldwide: 2898 publications
- In Canada: 68 publications
- In Romania: 6 publications
- Dr Botez: 17 publications, 1st place in Canada, in Romania and in the world

Aircraft Model
- Worldwide: 1.722 publications
- In Canada: 54 publications

- In Romania: 3 publications
- Dr Botez: 14 publications, 1st place in Canada and Romania, and 3rd place in the world

Aircraft Aerodynamics
- Worldwide: 9.141 publications
- In Canada: 239 publications
- In Romania: 3 publications
- Dr Botez: 33 publications, 1st place in Canada, 1st exequo place in the world and 8th place in the world

Aircraft AND (simulation OR simulator)
- Worldwide: 6.368 publications
- In Canada: 169 publications
- In Romania: 18 publications
- Dr Botez: 18 publications, 1st place in Canada and 13th exequo place in the world

Wind Tunnel Tests

- Worldwide: 19.575 publications
- In Canada: 672 publications
- In Romania: 41 publications
- Dr Botez: 37 publications, 3rd place in Canada, 1st place in Romania, and 34th exequo place in the world

In Scopus, the impact of citations of Dr Botez has been analyzed by use of the **Field-Weighted Citation Impact (FWCI).** ''The FWCI is the ratio between the number of citations received by a set of documents and the average number of citations received by similar documents (documents of the same type, published during the same period and in journals categorized under the same subject areas). A FWCI >1 indicate a higher citation rate than the world average; for instance, a FWCI of 1.21 indicates a citation rate 21% higher than the world average.'' Between 2011 and 2020, Professor Botez's publications have been cited, by use of the FWCI on average 79% more than the world average in her field.

During 2011-2020, the highest number of publications and citations of Dr Botez according to Scopus research were in the three following sub-fields where Dr Botez' number of citations were higher than the number of citations worldwide, as seen in the results of Scopus analysis shown below:

Morphing; Wing Camber; Ailerons

Dr Botez contributed in this field with a number of 77 publications and the FWCI = 1.47, which means that the average of Dr Botez' citations was 47% higher than the worldwide average of citations.

The total number of 1.682 publications in this field had the FWCI = 1.32, which means that Dr Botez' citations number was above the number of citations of the worldwide publications.

Airports; Air Transportation; Aircraft

Dr Botez contributed in this field with a number of 74 publications and the FWCI was equal to 2.67, which means that the average of Dr Botez' citations was 167% higher than the worldwide average of citations.

In comparison, the total number of 15.576 publications in this field worldwide had the FWCI = 0.83, which means that they have received an average of citations 17% smaller than the average number of citations of the worldwide publications in this field. It is therefore evident that in this field, Dr Botez' citations number was above the number of citations of the worldwide publications.

Trajectory Optimization; Flight Management Systems; Vertical Flight

Dr Botez contributed in this field with a number of 72 publications and the FWCI was equal to 2.72, which means that the average of Dr Botez' citations was 172% higher than the worldwide average of citations.

In comparison, the total number of 1.063 publications in this field worldwide had the FWCI = 0.98, which means that they have received an average of citations 2% smaller than the average number of citations of the worldwide publications in this field. It is therefore evident that in this field, Dr Botez' citations number was above the number of citations of the worldwide publications.

The involvement in social media demonstrates the researcher's commitment to the increased dissemination of her research results and her openness to collaboration and exchanges with the community. For more details, please consult the Research Gate (RG) website at

Recently, on 20th of August 2024, Dr Botez had a high research interest score of 4,061. This research score is higher than 98% of RG members and 99% of researchers with work related to Aeronautical Engineering). Dr Botez is often the most popular researcher according to the number of 'Reads' of articles = 310,000, thus indicating the high amount of interest in the research presented in her publications.

6.4 Editorial activities

1. Editor-in-Chief, since 2013, "National Institute for Aerospace Research Elie Carafoli INCAS Bulletin" (under the aegis of the Romanian Academy), edited by the INCAS
2. Editorial Board Committee Member, since 2024, "Eskisehir Technical University Journal of Science and Technology (ESTUJST-A)".
3. Editorial Board Committee Member, since 2024, "Frontiers in Aerospace Engineering".
4. Guest Editor, since 2024, "Aerospace", Special Issue: Aircraft Design and System Optimization.
5. Editorial Board Committee Member, since 2023, "ScienceRise (Scientific Route)".
6. Associate Editor, since 2022, "Drones and Autonomous Vehicles".
7. International Advisory Committee Member, since 2022, "Romanian Journal of Technical Sciences – Applied Mechanics", edited by the Romanian Academy, since 2022.
8. Associate Editor, since 2022, "Aeronautical Journal", edited by the Cambridge University Press.
9. Associate Editor's Board Member, since 2022, "Drone Systems and Applications", edited by the Canadian Science Publishing
10. Editorial Board Member, since 2021, "International Journal of Aviation Science and Technology" edited by the SARES
11. Editor-in-Chief, "Designs" - Vehicle Design Engineering Section, since 2021, edited by the MDPI
12. Guest Editor, 2021-2022, "Designs", Special Issue: Unmanned Aerial System (UAS) Modeling, Simulation and Control, edited by the MDPI

13. Guest Editor, 2020, "Applied Sciences", Special Issue: Aircraft Modeling and Simulation, edited by the MDPI
14. Editorial Board Member, since 2016, "Designs", edited by the MDPI
15. Member of the International Programming Council (Editorial Advisory Board), since 2016, "Transport Problems" international scientific journal, Print edition: ISSN 1896-0596 Online edition: ISSN 2300-861X
16. Book and Section 4 entitled "Systems Design", Editor, 2016-2018, Chapter 12 of the book "Morphing Wing Technology. Large Commercial Aircraft and Civil Helicopters", edited by Elsevier, (biography of Dr Botez is mentioned on page xxxi of this book)
17. International Member of the Editorial Committee, since 2013, "Chinese Journal of Aeronautics", edited by Elsevier
18. Editorial Board Member, 2009-2013, "National Institute for Aerospace Research Elie Carafoli INCAS Bulletin", edited by the INCAS.
19. Editorial Board Member, 1999-2008, "Canadian Society of Mechanical Engineering CSME Transactions", edited by the CSME.

6.5 Technical Session Chair and Chair at various conferences and events (selected)

1. Chair of the "AIAA SciTech 2024 Adaptive Structures Conference" during 2023-2024.
2. Deputy TDC (Co-Chair) of the "AIAA SciTech 2023 Adaptive Structures Conference" during 2022-2023.
3. Session Chair at the "AIAA SciTech 2022" of 2 Technical Panels and 1 Special Session: AS-02 Technical Panel: Spotlight Session of Multifunctional Structures Technology, AS-17 Inter-Agency Panel on Aeronautics (Intitator of the AS-17 Panel) and AS-07 Special Session: Bombardier: Over 40 Years of Aerodynamics and Technology, 2022.
4. Session Chair at the "AIAA SciTech 2021" of the AS-18 & AS-19 Special Sessions: Canadian Smart Materials and Adaptive Structures Research Programs I and II, 2021.
5. Session Chair and reviewer of papers for the "AIAA SciTech" and "AIAA Aviation" conferences for the "Adaptive Structures" and "Modeling and Simulation" disciplines, yearly since 2009.
6. Invited Member for Track T06 "Experimental Support and Techniques" of the 8th International Energy Conference & Workshop REMOO in Venice that took place in 2018.
7. Congress Chair of the "41st Congress of the Romanian-American Academy of Arts and Sciences ARA" that took place at the University of Craiova in Romania, 2017
8. Technical Chair and Organizer of eight (8) "Canadian Aeronautics and Space Institute Aircraft Design & Development CASI Aircraft Design and Development AD&D" Symposium since 2007. The website of the CASI conference in 2021 is
9. Section Chair Committee and Councillor of the "Canadian Aeronautics and Space Institute Aircraft CASI" since 2007
10. Chair of the "International Association of Science and Technology for Development IASTED Awards Committee", 2016.
11. Session Chair at the "6th International Conference & Workshop REMOO-2016", 2016.
12. Session Chair at the "18th International Conference on Mathematical Methods, Computational Techniques and Intelligent Systems", 2016.
13. Session Chair at the conferences in "Modeling, Identification and Control (MIC)" organized by the "International Association of Science and Technology (IASTED)" yearly during 2014-2017.
14. Chair of the "Aircraft Modeling & Simulation Session of the American Society of Mechanical Engineering International Mechanical Engineering Congress & Exposition ASME - IMECH14". Organisation of this session and evaluation of more than 20 papers submitted for their presentations at this conference, that took place in Montreal, Que., Canada, 2014.

15. Chair of the Session on "Systems, Subsystems and Control in Aeronautics" for the conference organized by the "National Institute for Aerospace Research Elie Carafoli INCAS" and the "Gheorghe Mihoc-Caius Iacob Institute of Mathematical Statistics and Applied Mathematics of the Romanian Academy", 2014.
16. Moderator together with by Dr Pier Marzocca from Clarkson University of a panel of experts discussing missions and operations on civil and military UAVs at the "2013 AeroTech Congress & Exhibition" in Montreal, Que., Canada, 2013.
17. Chair of the "Aircraft Modeling and Simulation" Special Session at the "38th Annual Conference of the IECON Industrial Electronics Society 2012" organized by IEEE. Evaluation of scientific papers submitted for their presentations at the IECON 2012 conference that took place in Montreal, Que., Canada, 2012.
18. Chair of the Session on Dynamical Systems organized in the "33rd Edition of the Conference "Caius Iacob" Fluid Mechanics and its Technical Applications at the National Institute for Aerospace Research Elie Carafoli INCAS". Evaluation of scientific papers submitted for their presentation to this conference that took place at the INCAS Headquarters, Bucharest, Romania, 2011.
19. Session Chair of the "Applied Vehicle Technology AVT-168 Panel on Morphing Vehicles" conference organized by the NATO in 2009.
20. Session Chair at the "7th World Congress on Structural and Multidisciplinary Optimization" conference, Seoul, South Korea, 2007.
21. Session Chair at the "International Symposium on Industrial Electronics", 2006.
22. Session Chair for the "Engineering Section of the Romanian American Academy of Arts and Science ARA", and Member of the ARA Organizing Committee since 2001. This participation has ensured contacts and collaboration with Romanian professors in engineering throughout the world and has facilitated graduate student recruitment, starting in 2021.

7.1 Selected Member of Scientific and Technical Committees (selection since 2007)

1. "Committee Member", "International Sustainable Aviation and Energy Research Society (SARES) Awards Committee". Prof. Botez is member of the SARES Committee Award as SARES is attributing 5 types of awards yearly to researchers in the academic and industrial environment: Lifetime Achievement Award, Science Award, Young Scientist Award, Young Researcher Award and Company Award in Green Aviation. The committee evaluates the nominees or recommended applications for these awards since 2024.
2. "Committee Member", "International Sustainable Aviation and Energy Research Society (SARES) Board Committee" - Main Representant of Canada. Prof Botez is the representant of Canada on the SARES Board Committee. She is in charge to recruit members for the SARES Board Committee, to form this committee, and to organize international events in Canada for the SARES since 2024.
3. "Committee Member", "American Institute of Aeronautics and Astronautics International Activities Group (AIAA-IAG)". Establishment of international presence and recognition in Canada of the AIAA. Foundation of a Local Chapter of Canadian researchers activities. In this Committee, candidates will be selected for AIAA international awards. Dr Botez is already the academic leader of the AIAA-ÉTS Students Chapter.
4. "Co-organized and coordinated over 8 Special Sessions, in collaboration with the 2022 AIAA SciTech Technical Forum Chairs and 7 AIAA Technical Committees". Roles and responsabilities included: *Recruited Technical Papers* for the Clean Aviation Special Session: Adaptive Wing – AIRGREEN 2, Special Session: Advances in Adaptive Structures – European Research Programs & Initiatives, *Served as Session Chair and Moderator* for the Inter-Agency Panel on Aeronautics, Special Session: Bombardier – over 50 Years of Innovation, Spotlight Session on Advanced Structures Technology, *organized and coordinated* the Technical Lecture: Wind Tunnel Testing for SSTO Concepts using Reactive Models, Special Session: Canadian Smart Materials and Adaptive Structures Research

Programs I and the Special Session: Canadian Smart Materials and Adaptive Structures Research Programs IV in 2022.

5. "Expert" to assist the European Commission in an evaluation of projects in aerospace engineering submitted under Horizon 2020 - Research to assist the European Commission in an evaluation of projects in aerospace engineering submitted under Horizon 2020 Executive Agency of the European Commission Funding & Tenders Portal since 2021.
6. "Scientific Committees" Member of the 6 conferences "International Conference of Aerospace Sciences": "AEROSPATIAL 2022", "AEROSPATIAL 2020", "AEROSPATIAL 2018", "AEROSPATIAL 2016", "AEROSPATIAL 2014" și "AEROSPATIAL 2012", that took place every 2 years at INCAS (under the aegis of the Romanian Academy) in Bucharest, Romania, during 2012-2022.
7. "Program Committee" Member of the conference "International Conference of Aerospace Sciences AEROSPATIAL 2012", organized by INCAS and the Institute "Gheorghe Mihoc-Caius Iacob", in Bucharest, Romania, 2012.
8. "Program Committees" Member of the 7 international workshops "2nd, 3rd, 4th, 5th, 6th, 7th și 8th International Workshop on Numerical Modelling in Aerospace Sciences" ("NMAS 2014", "NMAS 2015", "NMAS 2016", "NMAS 2017", "NMAS 2018", "NMAS 2019", "NMAS 2020"), that took place every 2 years at INCAS in Bucharest, Romania, during 2014-2020.
9. "Scientific Committees" Member of 6 conferences "33rd, 35th, 36th, 37th, 38th și 39th Caius Iacob Conference on Fluid Mechanics and its Technical Applications"), that took place every 2 years at INCAS, ISMMA – Institute of Mathematical Statistics and Applied Mathematics of the Romanian Academy Gheorghe Mihoc – Caius Iacob in Bucharest, Romania in collaboration with Bucharest University and IPB from Bucharest, 2011-2021.
10. Member of the Canadian National Committee (CNC) of the International Union of Theoretical and Applied Mechanics (IUTAM), 2021-2024, Canadian National Committee for International Union of Theoretical and Applied Mechanics.
11. AIAA Branch Students Advisor at ÉTS since 2020, in Montreal, Canada, as seen on the AIAA website.
12. Member of the ÉTS Aerospace Engineering Committee Program since 2020.
13. Member of the ÉTS Committee Program for the Selection of Professors in Aerospace Engineering in the Department of Systems Engineering (2020-2021)
14. Member of the ÉTS Promotion Committee of Professors in the Department of Systems Engineering (2021-2024)
15. Member of the "Standards Council of Canada SCC Mirror Committee MC/TC20/SC16 for Unmanned Aircraft Systems", since 2019.
16. Invited Member of the "Advisory Committee of the IUTAM Symposium in honor of Professor Païdoussis", 2019.
17. Member of the "Killam Awards Scholarships and Fellowships" Committee, 2019-2022.
18. Invited Member of the Organizing Committee for the "International Conference on Modeling and Simulation" that took place in Paris, France, 2018.
19. Invited Member of the "NSERC Vanier Canada Graduate Scholarships (Vanier CGS)" Selection Committee during 2017-2018.
20. Invited External Permanent Member of the Scientific Board of the "National Institute of Aerospace Research and Development INCAS" in Bucharest, Romania as part of its Main Management Structure, as representative researcher with high quality scientific scientific competence and a vast experience in the scientific field, since 2017.
21. Invited Member of the Scientific Committee of the "6th Council of European Aerospace Societies CEAS 2017" conference; this conference took place at Bucharest in Romania. In this quality, she reviewed a number of four papers submitted for publication in the Council of European Aerospace Societies CEAS 2017 Proceedings.
22. Member of the "International Conference on Modeling and Simulation" Organizing Committee, London, UK, 2017.

23. Lifetime Member of the "American Institute of Aeronautics and Astronautics AIAA Adaptive Structures" Committee since 2009
24. Member of the "36th IASTED International Conference on Modelling, Identification and Control (MIC 2017)" International Program Committee", 2017.
25. Member of the "White Rose Order of Ecole Polytechnique" Selection Committee, 2015.
26. Member of the "Tri-Agency TC3 Data Management Policy" Advisory Committee, organized by the Social Sciences and Humanities Research Council, the Natural Sciences and Engineering Research Council, and the Canadian Institutes of Health Research, 2015.
27. Member of the "Women in Aerospace" Committee in Montreal. Participation at the "Women in Aerospace" speed-mentoring event at ÉTS, 2015.
28. Member of the "ETS Department of Automated Production Engineering" Research Committee (2014-2018).
29. Member of the "AEROETS" Executive Committee since 2013.
30. Member of the "Society of Automotive Engineering SAE International AeroTech Congress and Exhibition" Unmanned Aerial Systems Sessions Organisation Committee, 2013-2016.
31. Member of the "MITACS" Canadian Committee for the evaluation of undergraduate and graduate students' applications, 2013-2016.
32. Member of the "International Association of Science and Technology for Development IASTED" Technical Committee since 2016.
33. Member of the "7th International ENERGY Conference & Workshop – REMOO" Programme/Scientific Committee since 2016.
34. Member of the "Order of Engineers in Quebec (OIQ)" Committee for the selection of the OIQ Excellence Award Winner, 2012.
35. Member of the "American Romanian Academy (ARA) of Arts and Sciences" Executive Committee, as Canadian Branch representative and organizer.
    Dr Botez was in charge of the revision of papers submitted for presentation at the ARA conferences. She was also the ARA Canadian Branch representative in charge to recruit ARA Canadian members. This participation has ensured contacts and collaborations with Romanian professors and researchers in Engineering throughout the world and has facilitated graduate student recruitment, 2000-2013.
36. Director-at-Large of the "American Helicopter Society AHS" International, today called the " Vertical Flight Society", Montreal-Ottawa Section, Dr. Botez participated mainly in the organization of conferences in Montreal, thereby ensuring visibility for the LARCASE students at ÉTS in activities organized by the Local AHS Committee. Thus, she was also Committee member of the AHS International Montreal Local Branch, 2006-2014.
37. Member of the "NSERC Thermo-Fluids" Committee for the evaluation of NSERC Discovery and Research Tools and Instruments (RTI) grant applications, 2011-2012.
38. Member of the "Scientific Advisory Committee" of the 2010 International Multi-Disciplinary Conference on Systems, Sensors, Devices, and Information Technology (S2DIT), Bucharest, Romania, 2010.
39. Member of the "YWCA" Committee for the "Women of Distinction Gala", Montreal, Que., Canada, 2009.
40. Member of the "Selection Jury" for the "Student Aerospace Forum (SAF)" competition, Montreal, Que., Canada, 2009.
41. Member of the External Affairs Committee for the "American Romanian Academy of Arts and Sciences ARA" Leadership and Governance, 2013-2017
42. Member of the "American Romanian Academy of Arts and Sciences ARA" Executive Committee as Canadian Branch representative and organizer, 2001-2009.
43. Member of the "ARA Local Organizing Committee" of the 26th Annual Congress of the "American Romanian Academy of Arts and Sciences ARA", that took place in July 25-29, 2001, please see page 1 for more details on the website
44. Technical Chair and Member of the Technical Committee for the "NATO Air & Sea Vehicles Working Group on the AVT-168 – Morphing Vehicles", 2007.

45. Member of the Working Group for "AVT-161 – Assessment of Stability and Control Prediction Methods for NATO Air & Sea Vehicles", 2007-2012.

7.2 Memberships and Fellowships of well-known aerospace committees

1. Honorary Member, International Sustainable Aviation and Energy Research Society SARES, since 2024.
2. Member, European Academy of Sciences EUAS, since 2024.
3. Fellow, American Institute of Aeronautics and Astronautics AIAA, since 2024.
4. Member, Romanian Academic Association of Canada RAAC, since 2024.
5. Fellow, International Artificial Intelligence Industry Alliance AIIA-AI, since 2023.
6. Fellow, Asia-Pacific Artificial Intelligence Association AAIA, since 2023.
7. Member, International Sustainable Aviation and Energy Research Society SARES, since 2023.
8. Fellow, Canadian Aeronautics and Space Institute CASI, since 2022.
9. Fellow, Canadian Academy of Engineering CAE, since 2022.
10. Fellow, Royal Aeronautical Society RaeS, since 2021.
11. Fellow, International Association of Advanced Materials IAAM, since 2020.
12. Member, Society of Automotive Engineering SAE International, since 2013.
13. Member, Vertical Flight Society (VFS) International, since 2002.
14. Associate Fellow, Canadian Aeronautics and Space Institute CASI, since 1998.
15. Member, American Society of Mechanical Engineers ASME, since 1989.
16. Associate Fellow and Lifetime Member, American Institute of Aeronautics and Astronautics AIAA, since 2006.
17. Member, American Institute of Aeronautics and Astronautics AIAA, since 1987.
18. Member, American Romanian Academy of Arts and Sciences ARA, since 1987.

8. Recognitions for Dr Botez and her team

8.1 Awards and distinctions obtained by Dr Botez (30)

1. The "Research Award of Excellence of the ÉTS Administration Committee" was given to Dr Botez. There are more than 200 professors at ETS and Prof. Botez has won this award in 2024 for the ' excellence of her students' research projects and theses supervision and for the exceptional demonstration of her research results during many years'. An amount of 7000 CAD was also received on this occasion, ÉTS, 11th of April 2024, Montreal, Qc., Canada,
2. Election of Dr Botez as an " American Institute of Aeronautics and Astronautics AIAA Fellow". Fellows are persons of distinction in aeronautics or astronautics who have made notable and valuable contributions to the arts, sciences, or technology thereof. A special Fellow Grade Committee reviews Associate Fellow nominees from the members and makes recommendations to the Board of Directors, which makes the final selections. One Fellow for every 1000 voting members is elected each year. There have been approximately 2000 distinguished persons elected since the inception of this Honor in 1934 (90 years in 2024) or only 23 Fellows per year and most of them are from the US. Prof. Botez is the 4th Canadian to be elected among more than 2000 persons, therefore this title is considered as the highest distinction received as an Aerospace Specialist. The names of the 2024 Class of AIAA Fellows and Honorary Fellows were announced on 8 of February 2024, Washington, DC., USA on the following website
3. Prof. Botez was awarded the diploma as "World's AI Top Scientist of the International Artificial Intelligence Industry Alliance (AIIA-AI) ". Prof. Botez was chosen as one of the World's AI Top Scientist of International Artificial Intelligence Industry Alliance. The profile of Prof. Botez is on the AIIA website:

4. Prof. Botez was awarded the "Diploma for Excellent Realizations of Romanians in Canada". This diploma was awarded to Prof. Botez at the 4th Edition of the "Arts Gala" in Berthierville in Quebec province, Canada in the Category called "Romanians of which we are proud of". This Gala was organized by "Universum VIP Studios", and it took place on 26th of August 2023 at the Roman Domain.
5. Election of Dr Botez as an "Asia-Pacific Artificial Intelligence Association AAIA Fellow". The AAIA aims to build a broad AI industry to promote the development and application of AI in different fields of science and technology. AAIA gathers top scientists in different disciplines that can be combined with AI, AI related institutions, and entrepreneurs that have AI applications to drive innovation, development and application of AI. AAIA is an interdisciplinary organization of AI industries. The main mission of AAIA is to enhance the development and application of artificial intelligence by scientists in the field of artificial intelligence around the world, the website of the AIAA is
6. The "Special Diploma of Merit for Performance Appreciation" was given to Prof. Ruxandra Botez for her dedication, passion and professionalism by the "Observatorul" - Canadian Romanian Group for Arts, Culture & Science, 15th of January 2023 in Toronto, Ont., Canada,
7. Election of Dr Botez as *Canadian Aeronautical and Space Institute CASI Fellow*, 2022; it was announced on 24th of May 2022,
8. Finalist for the award "Honoris Genius — Recherche ou enseignement du génie" by the "Ordre des ingénieurs du Québec", 2022. The awardee will be announced on 18th of May 2022,
9. Election of Dr Botez as *Canadian Academy of Engineering CAE Fellow*, 26th of June 2022,
10. Dr Botez has received the *2021 ARA Excellence in Science Award* from the American Romanian Academy of Arts and Science ARA, 30th of January 2022
11. Dr Botez has received the *2021 Rodica Bărănescu Award for Technical & Leadership Excellence*, which was established in 2011 by SAE International in the USA. This award (*a statue*) was given to Dr Botez with the aim to recognize her "exceptional technical competency and leadership, and worldwide contributions to the Aerospace industry at large".
12. The *SARES Science Award* was given to Dr Botez for her novel scientific contributions to the area of "Sustainable Aviation and Energy" by the Sustainable Aviation Research Society (*SARES*). The poster of all awards and awardees is published on the website of the *International Symposium on Sustainable Aviation ISSA 2021*, that took place during 25-27 November 2021, 2021 ISSA – 2021 ISSA (issasci.org), as well as on the website of the Sustainable Aviation | SARES Sustainable Aviation Research Society, November 27, 2021.
13. Member of *McGill Fund Loyalty Circle* since June 18, 2021. The McGill Fund Loyalty Circle is an exclusive group of donors for research advancements to the University regularly.
14. Election of Dr Botez as *Royal Aeronautical Society RAeS Fellow* (invited by Dr Jonathan Cooper, President of the RAeS in 2020-2021), 2021, École de Technologie Supérieure.
15. Election of Dr Botez as *International Association of Advanced Materials IAAM Fellow*, 2020, IAAM Online.
16. *International Association of Advanced Materials IAAM Medal Award* was given to Dr Botez at the "26th IAAM conference" in Stockholm, Sweden, 2019.
17. *International Association of Advanced Materials IAAM Guest of Honour Diploma* was given to Dr Botez at the "26th IAAM Conference" in Stockholm, Sweden, 2019.
18. *Certificate of Recognition* was given to Dr Botez, as Keynote Speaker, at the "21st Edition of the International Conference of Scientific Research and Education "AFASES 2021", that took place at the Air Force Academy Henri Coandă, ("under the patronage of Romanian Presidency of the Council of the European Union") at Brașov, România, 2019.

19. The painting depicting interesting aviation images, including the portrait of researcher Henri Coandă, was awarded to Professor Botez at the "AFASES 2021" conference by the Commandant Rector, Brigadier General and Associate Professor, Dr Gabriel Răducanu Brasov, Romania, 2019.
20. Election of Dr Botez as *Canadian Aeronautical and Space Institute CASI Associate Fellow*, 2019, Canadian Aeronautics and Space Institute.
21. Dr Botez was recognized as *Highly Cited Author* in the *Chinese Journal of Aeronautics* (source: *Scopus*), 2018.
22. *Special Environmental Award* was given to Dr Botez at the "Global and Regional in Environmental Protection GLOREP 2018" conference in Timișoara, Romania. This award consisted in a painting made by Mr. Mihai Teodor Olteanu, the very well-known Romanian artist of the Romanian Revolution (that started in Timișoara).
23. "Diploma de excelență în serviciul cercetării aerospațiale în Romania" and the "medalia de excelență" were given to Dr Botez for her Achievements in *Romanian Aerospace Research*. The Medal was given for the celebration of 30 years since the fighter IAR-99 was designed and manufactured. Both of them were given to Dr Botez by Dr Nae Catalin, the INCAS Director and by the President of the INCAS Scientific Council, Dr Ioan Ursu on 24th of October 2018 at Bucharest in Romania at the Romanian Academy with the occasion of the conference called "100 Years of Aviation in Romania (1919-2018)", 2018.
24. The "*2017 ARA Award for Excellence in Aerospace Engineering for international contribution to the aerospace engineering and profession*" was given to Dr Botez for her international contribution to Aerospace Engineering and Education by the American Romanian Academy (ARA) of Arts and Sciences at Craiova at the ARA conference.
25. Election of Dr Botez as *American Institute of Aeronautics and Astronautics AIAA Associate Fellow*, 2016.
26. *Name of Dr Botez on the Short list* of the best 14 presentations and papers at the *Award selection* at the "Greener Aviation Clean Sky breakthroughs and worldwide status conference" in Brussels, Belgium, March 12-14, 2014.
27. *Congratulation letter from the Prim-Minister of Canada Mr Stephen Harper.* This letter was received by Prof. Botez with the occasion of the obtention of the "Canada Research Chair in Aircraft Modeling and Simulation Technologies", and it mentioned: "This recognition from your peers is a symbol of the importance of your research for the future of our country and its citizens and is a testament to the high standards that you have achieved with your work. Your efforts have had a vital role not only in increasing our nation's competitiveness but also in improving the quality of life of all Canadians. You may be proud of your innovative and exciting ideas. They have made you a leader in your field and have contributed to Canada's strength and prosperity. On behalf of the Government of Canada, I wish you every success in your future endeavours". The letter was signed by Mr Harper on 20th of February 2012.
28. *Certificate of Excellence to the CRIAQ Pioneers for her outstanding contribution to the CRIAQ 3.4 research project.* This certificate was given to Prof. Botez for her qualities of academic leader of the first CRIAQ major funded project called CRIAQ 3.4, 2007.
29. The *Research Award of Excellence of the ÉTS Administration Committee* was given to Dr Botez for "her exceptional researcher qualities, industrial achievements, and for the graduation of a high number of Master's and PhD students", ÉTS, 2007.
30. *Finalist in the 2006 Women of Distinction Gala in the Education Category* presented by the National Bank and organized by the YWCA Foundation, 2006. She obtained a *certificate and a statue* in "recognition of personal and professional accomplishments, social commitment and an important contribution to the advancement of women"

8.2 Awards obtained by Dr Botez as Project Leader (4) and Participant (1)

1. *Premio Venezia* for the CRIAQ MDO-505 project realizations in the category *Scientific and Academic* following a competition between Canadian-Italian projects. This award was given by the *Italian Chamber of Commerce* to Dr Botez (academic leader) and her team, 2015.
2. *Second-place Award* for the *CRIAQ MDO 505 on-going project* – project in collaboration with Bombardier, Thales, Polytechnique Montreal, NRC-IAR, Alenia, CIRA, University of Naples. This award was given by the CRIAQ to Dr. Botez and her team following a CRIAQ projects competition in 2014.
3. *Presagis Award* for the *Best Simulation Model* was given to to Dr. Botez and her team by the Aerospace company Presagis following a competition between projects in modeling and simulation performed in collaboration with Presagis, November 15, 2012.
4. *Third-place Award for the CRIAQ 7.1 completed project* obtained with the occasion of the 10th Anniversary of CRIAQ was obtained by Dr Botez and her team working on the CRIAQ 7.1 project formed by professors Ruxandra Botez, Vladimir Brailovski & Patrick Terriault (LAMSI-ETS), Ion Paraschivoiu (Ecole Polytechnique) and their students, Dr Mahmood Mamou and his team at the IAR-CNRC, the industrial leaders: Mr Philippe Molaret from Thales Canada, Dr Eric Laurendeau and Dr Fassi Kafyeke from Bombardier Aerospace. This award was given by the CRIAQ to Dr. Botez and her team following a CRIAQ projects competition organized with the occasion of the CRIAQ 10th anniversary on March 16, 2012.
5. *Research and Technology Organization RTO Scientific Achievement Award 2012* - the most prestigious award offered to the research team of the AVT-161 "Assessment of Stability and Control Prediction Methods for NATO Air and Sea Vehicles" by NATO.
   The research team was composed by 46 participants from 14 countries. Dr Ruxandra Botez was the officially appointed technical team member from Canada.

8.3 Awards obtained by LARCASE team students including Dr Botez for their international journal and conference proceedings papers (4)

1. *Charles M Manly Memorial Medal* 2020, *obtained from SAE International* for the journal paper entitled: "Particle Swarm Optimization with Required Time of Arrival Constraint for Aircraft Trajectory", SAE International Journal, Special Issue on ''Innovations for Sustainable Aviation'', Vol. 13(2), pp. 269-291, 2020. This journal paper was written by: Mr. Alejandro Murrieta-Mendoza (PhD student), Dr. Ruxandra Botez, Mr. Hugo Ruiz (Bachelor's student) and Miss Sonya Kessaci (Bachelor's student). The medal was obtained ''in recognition of being a co-author of an outstanding SAE Technical Paper related to the theory of practice, in design or construction of, or research on, aerospace engines, their parts, components or accessories", and it was received officially from SAE International during the AEROTECH virtual event on 9th of March 2021 (while each author of the paper received by FedEx mail its diploma).
2. *PhD Prize of the Second International Symposium on Flutter and its Application* (*ISFA2020*), obtained by the PhD students Mr. Tavallaeinejad (McGill University) and Mr. Manuel Flores Salinas (LARCASE at ÉTS) for the conference paper entitled "Why Inverted Flags Flap: An Experimental Study", that was written by Tavallaeinejad, M., Paidoussis, M. P., Salinas, M. F., Legrand, M., Khein, M. and Botez, R. M. and published in the ISFA2020 Conference Proceedings of the ''ISFA2020'' in Paris, France, May 11-15, 2020.
3. *Certificate of the Best Paper Award*, obtained at the *20th International Conference on Engineering Education and Research* (*ICEER 2018*) for the conference paper entitled: "Aerodynamic Coefficients Prediction from Minimum Computation Combinations using OpenVSP Software", that was written by Miss Marine Segui (PhD student) and Dr. Ruxandra Botez. This award was given by the World Academy of Science, Engineering and Technology in Innsbruck, Austria, 2018.

4. *Award UEFISCDI/PN III, Sub-Program 1.1. Human Ressources - Competition* "*Awards of research results – articles 2017* for the journal paper: "Proportional fuzzy feed-forward architecture control validation by wind tunnel tests of a morphing wing"*,* Chinese Journal of Aeronautics, vol. 30, nr. 2, 2017, pp. 561-576. This paper was written by Mr. Michel Joel T. Kammegne (PhD student), Dr. Ruxandra Botez, Dr. Lucian Grigorie, Dr. Mahmoud Mamou, Dr. Youssef Mébarki. Project code: PN-III-P1-1.1-PRECISI-2017-20037.

8.4 Awards obtained by LARCASE team students including Dr Botez for their international conference presentations (3)

1. *Certificate of the Best Presentation Award 2018*, obtained at the *20th International Conference on Engineering Education and Research* (*ICEER 2018*), for the conference proceedings paper entitled: "Design and Validation of an Aerodynamic Model of Cessna Citation X Horizontal Stabilizer using both OpenVSP and Digital DATCOM" and written by Miss Marine Segui (PhD student), Mr. Matthieu Mantilla (Bachelor's student), Dr. Ruxandra Botez. This award was given to Miss Marine Segui by the World Academy of Science, Engineering and Technology *WASET* in Innsbruck, Austria, 2018.
2. *Best Oral Presentation Award* obtained at the 38th Annual Conference of the IEEE Industrial Electronics Society IECON 2012*,* "Vertical Profile Optimization for the Flight Management System CMA-9000 using the Golden Section Search Method", Mr. Roberto Felix Patron (PhD student). This award was given by IEEE in Montreal, Que., Canada, 2012.

3. *Best Oral Presentation Award* at the *International Symposium on Industrial Electronics IEEE_ISIE*, "Ground Dynamics Model Validation for a Simulator Certification", Mr. Michel Nadeau-Beaulieu (PhD student). This award was given by IEEE in Montreal, Que., Canada, 2006.

8.5 Awards obtained by LARCASE team students including Dr Botez for international conference posters, more specifically at the *41st and 40th Congresses of the Romanian-American Academy of Arts and Sciences ARA* – a total of 8 awards

8.5.1 *Poster Awards at the 41st Congress of the Romanian-American Academy of Arts and Sciences* (*ARA*), University of Craiova, Romania, July 19-22, 2017.

1. *Poster Award* in *Morphing Wing Modeling and Simulation*, Title of the poster: "Experiments on a Real Aircraft Morphing Wing" obtained by the CRIAQ MDO 505 team by Dr Botez and her team: Dr. Teodor Lucian Grigorie, Mr. Michel Joel Tchatchuneg Kammegne, Miss Andreea Koreanschi, Mr. Oliviu Șugar Gabor, Mr. Mohamed Guezguez, Mr. Yvan Tondji, Mr. Mahmood Mamou, Mr. Youssef Mébarki, Dr. Ruxandra Botez.

8.5.2 *Poster Awards at the 40th Congress of the Romanian-American Academy of Arts and Sciences* (*ARA*), Montreal, Canada, July 28-31, 2016.

The details of all the ARA Poster Awards obtained at the 41st *Congress of the Romanian American Academy of Arts and Sciences* (*ARA*) can be consulted on its ARA Awards webpage at

1. *ARA Poster Award in Aircraft Modeling* (1st Award), Title of the poster: "Development of Aircraft Database in Cruise Flight using Equations of Motion" obtained by Miss Alina Turculeț (Master's student), Mr. Georges Ghazi (PhD student), Dr Ruxandra Botez.
2. *ARA Poster Award in Unmanned Aerial Vehicle* (*UAV*) - 1*,* Title of the poster: "Wing Geometry Optimization for the UAS-S4 Ehecatl with the aim of Aerodynamics Performance Improvement" obtained by Mr Guillaume Tatrie (Bachelor's student), Mr Maximilien Hawawini (Bachelor's student), Dr Ruxandra Botez.

3. *ARA Poster Award in Navigation Modeling,* Title of the poster: "Aircraft Trajectory Optimization to reduce Fuel Consumption in Cruise" obtained by Mr Charles Romain (Bachelor's student), Mr Alejandro Murrieta Mendoza (PhD student), Dr Ruxandra Botez.
4. *ARA Poster Award in Unmanned Aerial Vehicle* (*UAV*) - 2*,* Title of the poster: "Estimation of the Flight Dynamics of the UAS-S4 through its Geometry Caracteristics" obtained by Mr Maxime Kuitche (PhD student), Miss Marine Segui (Bachelor's student), Miss Anais Kerroux (Bachelor's student), Dr Ruxandra Botez.
5. *ARA Young Scientist Poster Award,* Title of the poster: "Morphing Architectures and Related Technologies for Wing Efficiency Improvement" obtained by the CRIAQ MDO 505 Team and presented by Mr Manuel Flores Salinas (PhD student).
6. *ARA Young Scientist Poster Award - Wind Tunnel,* Title of the poster: "Numerical Modelling and Testing at the Price-Païdoussis Subsonic Wind Tunnel of Two Long Range Ground Surveillance Radars" obtained by Mr Oliviu Șugar Gabor (PhD student), Mr Manuel Flores Salinas (PhD student), Mr Oscar Carranza (Research Associate), Mr Cyril Ledent (Bachelor's student), Mr Robin Lacroix (Bachelor's student), Dr Ruxandra Botez.
7. *ARA Young Scientist Poster Award in Navigation,* Title of the poster: "Constant Altitude Cruise Trajectory Optimization for Required Time of Arrival" obtained by Mr Radu Dăncilă (PhD student), Miss Loredana Dugulean (Master's student), Dr Ruxandra Botez.

8.6 Poster Awards won at the national competitions in Quebec, such as the Students Aerospace Forum (SAF) in Quebec universities, at the Discovery Day at ", at the CRIAQ Forum by the LARCASE team working on research projects under Dr. Botez' supervision (14)

1. *Best Poster Award*, Miss Maimouna Gueye (Bachelor's student), "Simplified Simulation Model Design for the Cessna Citation X", *ÉTS Systems Engineering Poster Competition*, 2018.
2. *Best Poster Award*, Mr Lars-Rudolf Hetfi (Bachelor's student), "Cessna Citation X Modeling and Simulation using the RAFS", *ÉTS Automated Production Engineering Poster Competition*, 2016.
3. *Third-place Poster Award*, Mr Roberto Felix Patron (PhD student), "Trajectories Optimization Algorithms for the Flight Management System", *ÉTS Discovery Day*, Montreal, 2014.
4. *Third-place Poster Award,* Mr Georges Ghazi (Master's student), "Platform for the Modeling, Simulation, Analysis and Control for the Cessna Citation X and Hawker 800 XP Businees Aircraft", *Students Aerospace Forum* (SAF), Montreal, 2013.
5. *Third-place Award,* Mr Souleymane Sidibe (Master's student), "Optimisation and Validation of Flight Trajectories of a Flight Management System FMS", *ÉTS Discovery Day*, Montreal, 2012.
6. *Second-place Award,* Mr Robin Calestreme and Mr Francois Michaud (Master's students), "AeroServoElastic Interactions Studies for the Laminar Flow Improvement on a Morphing Wing", *Students Aerospace Forum* (SAF), Montreal, 2012.
7. *First-place award including **300 $***, Mr Robin Calestreme (Master's student), "AeroServoElastic Study to improve the Laminar Flow on a Morphing Wing", ÉTS *Discovery Day*, Montreal, 2012.
8. *SAF Award*, Mr. Romain Brisemeur, Mr. Julien Fays, Mr. Gabriel Kouba (Master's students), "Flight Management System Improvement", *Students Aerospace Forum* (SAF), Montreal, 2009.
9. *American Helicopter Society (AHS) Award*, Ms. Sandrine De Jesus Mota (Master's student), "Bell-427 Parameter Estimation Modeling", *Students Aerospace Forum* (SAF), Montreal, 2008.
10. *SAF Award*, Ms. Sandrine De Jesus Mota (Master's student), "Bell-427 Parameter Estimation Modeling", *Students Aerospace Forum* (SAF), Montreal, 2008.

11. *SAF Award*, Mr. Thibault DesMottes and Mr. Nicolas Boëly (Bachelor's students), "Neural Network for F/A-18 Aircraft Modeling", *Students Aerospace Forum* (SAF), Montreal, 2008.
12. *AHS Award*, Mr. Patrick Dionne and Mr. Adil Marzouki (Bachelor's students), "Bell-427 Optimized Proof of Match Methodology", *Students Aerospace Forum* (SAF), Montreal, 2007.
13. *SAF Award*, Mr. Michel Labib and Mr. Laurentiu Birla (Master's students), Mr. Andrei Vladimir Popov (PhD student) and Mr. Julien Fays (Bachelor's student), "Morphing Wing Laminar Flow: New Controller Methodology", *Students Aerospace Forum* (SAF), Montreal, 2007.
14. *SAF Award*, Ms. Sandrine De Jesus Mota (Bachelor's student), "Subspace Methodology for F/A-18 Aircraft", *Students Aerospace Forum* (SAF), Montreal, 2006.

8.7 Excellence grades for project reports and thesis students graduating under Dr Botez' supervision (53)

1. De Jesus Gurrola, M., 2024, "CF34-8C5B1 Engine Deterioration Model to Assess the Impact in Fuel Consumption of the CRJ-700 Aircraft Flight Mission", *Excellent* PhD thesis.
2. Tondji, Y. W., 2024, "Advanced Machine Learning Approaches for Aircraft Aerodynamic and Flight Dynamics Modeling: A Study on CRJ-700 and Cessna Citation X", *Excellent* PhD thesis.
3. Panhaleux, A., 2024, "Development of a Propulsion Function of a Flight Control System", *Excellent* Master's in Aerospace Engineering project.
4. Moisseron, A., 2024, "Validation of an integrated Anti-Ice Pneumatic System for an Aircraft Wing using Flight Tests", *Excellent* Master's in Aerospace Engineering project.
5. Flores Salinas, M., 2023, "Wind Tunnel Tests and Fluid Dynamics Analyses of Wake Flows Near Blunt and Streamlined Bodies Models at high Reynolds numbers", *Excellent* PhD thesis.
6. Maxime Le Corre, 2023, "Service Engineering Methodologies at Bombardier", *Excellent* Master's in Aerospace Engineering project.
7. Placide Kenne Tangueu, 2022, Identification of Longitudinal Aerodynamic Coefficients of a Bombardier CRJ-700 Aircraft using Neural Networks, "Excellent" Master's project.
8. Dekeuka Djitsa, C., 2021, "Modélisation parametrée des moteurs du Bombardier CRJ700", *Excellent* Master's in Aerospace Engineering project.
9. Felipe Schiavoni Pinto, 2021, Structural Analysis of an Unmanned Aerial System UAS-S4 Morphing Wing, "Excellent" Master's in Aerospace Engineering project.
10. Mouhamadou, W., 2021, "Deep Learning Application to Aircraft Modeling in Stall Conditions", *Excellent* Master's in Aerospace Engineering project.
11. Marinkovic, M., 2021, "Interconnexion Studies at Thales", *Excellent* Master's in Aerospace Engineering project
12. Pain, H., 2021, "Optimisation de structure et études de contraintes d'un système d'aillettes adaptives", *Excellent* Master's in Aerospace Engineering project
13. Meyran, P., 2021, "Conception d'une ailette adaptative pour une optimisation des performances aérodynamiques d'un avion de transport régional", *Excellent* Master's in Engineering thesis
14. Andrianantara, R. P., 2021, "Modélisation des performances du moteur General Electric CF34-8C5B1 de l'avion CRJ700 à partir des réseaux de neurones et des tests en vol", *Excellent* Master's in Engineering thesis.
15. Mitard, T., 2021, "Architecture Système Drone", *Excellent* Master's in Aerospace Engineering project.
16. Ghazi, G., 2020, "Identification and Validation of an Aircraft Performance Model for the Study of Flight Trajectories of the Cessna Citation X", *Excellent* PhD thesis (proposed to be awarded).
17. Veniant, A., 2020, "Pedals Integration with Feedback on the A-320 Simulator", *Excellent* Master's in Aerospace Engineering project.
18. Gaillot, L., 2020, "Development of a Design Tool for Aircraft System", *Excellent* Master's in Aerospace Engineering project.

19. Planchon, C., 2020, "Attitude Control for a Mini-Nacelle", *Excellent* Master's in Aerospace Engineering project.
20. Planchon, C., 2020, "Flight Performance Analyses of the Airbus Airbus A-220", *Excellent* Master's in Aerospace Engineering project.
21. Kuitche, M. A., 2020, "Novel Modeling Technology for UAS-S4 and UAS-S45 Flight Dynamics", *Excellent* PhD thesis.
22. Roinson, H., 2019, "Aerodynamic Modeling of a Regional Aircraft Bombardier CRJ700 with OpenFoam Software for a Morphing Wing Study"*, Excellent* Master's in Aerospace Engineering project.
23. André, T., 2019, "Management of the Composite Structures of the Airbus A-220", *Excellent* Master's in Aerospace Engineering project.
24. Marcat, A., 2019, "Aerodynamic Modeling of the CRJ-700", *Excellent* Master's in Aerospace Engineering project.
25. Cimadevila, R. M., 2019, "Modeling of the Structural Dynamics of the Wing using Artificial Neural Networks MLP, RBF and NARX models", *Excellent* Master's in Aerospace Engineering project.
26. Duverger, N., 2019, "Development of New Manufacturing Equipment in Robotics at Bombardier Aviation"*, Excellent* Master's in Aerospace Engineering project.
27. Cosmao, S., 2019, "Thermal Modeling of an Aircraft"*, Excellent* Master's in Aerospace Engineering project.
28. Hedi Trad, M., 2019, "Mass Properties Analyses for the A-220"*, Excellent* Master's in Aerospace Engineering project.
29. Gagneux, P., 2019, "Validation and Improvement of a Technique for the Identification of an Aero-Propulsive Model"*, Excellent* Master's in Aerospace Engineering project.
30. Nejad, E. Z., 2019, "Identification of an Engine Model for the Bombardier CRJ-700 Aircraft based on Flight Tests", *Excellent* Master's in Aerospace Engineering project.
31. Cardet, C., 2019, "Identification of an Aerodynamic Model for the Bombardier CRJ-700 Aircraft from Flight Tests", *Excellent* Master's in Aerospace Engineering project.
32. Duverger, N., 2019, "Modeling of Aerodynamic Contributions for a Regional Aircraft Bombardier CRJ700 with OpenVSP software"*, Excellent* Master's in Aerospace Engineering project.
33. Dhouib, R., 2018, "Validation of a Performance Model for the Cessna Citation X", *Excellent* Master's in Aerospace Engineering project.
34. Gueye, M., 2018, "Modeling and Simulation Methods for the Cessna Citation X Level D Research Aircraft Flight Simulator", *Excellent* Bachelor's in Aerospace Engineering project.
35. Verdier, F., 2017, "Development of a Methodology to optimize the UAS-S45 Wing Airfoil using the ABC and PSO Algorithms", *Excellent* Master's in Aerospace Engineering thesis.
36. Dăncilă, B., 2017, "Flight Management Optimisation Methodologies", *Excellent* PhD thesis.
37. Murrieta Mendoza, A., 2017, "Application of Metaheuristic and Deterministic Algorithms for Aircraft Reference Trajectory Optimization", *Excellent* PhD thesis (proposed to be awarded).
38. Tondji Chendjou, Y., W., 2016, "Morphing Wing: Experimental Boundary Layer Transition Determination and Wing Vibrations Measurements and Analysis", *Excellent* Master's in Aerospace Engineering project.
39. Koreanschi, A., 2016, "Numerical and Experimental Validation of the Optimization Methodologies for a Wing-Tip Structure equipped with Conventional and Morphing Ailerons", *Excellent* PhD thesis (proposed to be awarded).
40. Bardela, P. A., 2016, "Identification and Validation of a Mathematical Model of the Cessna Citation X Business Aircraft by Flight Tests", *Excellent* Master's in Engineering thesis.
41. Beulze, B., 2016, "Development of a Mathematical Model allowing the Generation of Performance Data for a Flight Management System", *Excellent* Master in Engineering thesis.
42. Guezguez, M. S., 2016, "Morphing Wing System Integration with Wind Tunnel Testing", *Excellent* Master's in Engineering thesis (proposed to be awarded).

43. Șugar Gabor, O., 2015, "Validation of Morphing Wing Methodologies on an Unmanned Aerial System and a Wind Tunnel Technology Demonstrator", *Excellent* PhD thesis (proposed to be awarded).
44. Vincent, J. B., 2015, "Adaptive Wing: Design of the Actuation System for the Rigid Aileron, Characterization of the Pressure Sensors and Instrumentation for the Static Tests", *Excellent* Master's in Engineering thesis (proposed to be awarded).
45. Felix Patron, R. S., 2014, "Optimization of the Vertical Flight Profile on the Flight Management System for Green Aircraft", Excellent PhD thesis (proposed for Award).
46. Bélanger, V. and Bélanger, J., 2014, "Modeling and Simulation of Cessna Citation X", Excellent Bachelor in Engineering project.
47. Ghazi, G., 2014, "Development of a Simulation Platform and an Automatic Pilot for the Business Aircraft", *Excellent* Master's in Engineering thesis (proposed to be awarded).
48. Gagné, J., 2013, "New Method of Optimisation for the Flight Cost by use of an FMS and its validation on a Lockheed L-1011 Tristar", *Excellent* Master's in Engineering thesis (proposed to be awarded).
49. Cadrin, I., 2013, "Estimation of the Wing Lift Coefficient for the Cessna Citation X", *Excellent* Bachelor's in Engineering project.
50. Brisemeur, R., 2010, "Application of Genetical Algorithms in the Management of Aerial Conflicts in the Cruise Regime", *Excellent* Master's in Engineering thesis.
51. Popescu, D., 2010, "Determination of Hawker-800 XP Aircraft Stability from its Geometrical Data", *Excellent* Master's in Engineering thesis.
52. De Jesus Mota, S., 2008, "Identification and Validation of a Model of the Bell-427 Helicopter from Flight Test Data with a Time-Domain Method", *Excellent* Master's in Engineering thesis.
53. Nadeau Beaulieu, M., 2007, "Formulation of Mathematical Models using Parameter Estimation Techniques and Flight Test Data for the Bell-427 Helicopter and the F/A-18 Active Aeroelastic Wing Research Aircraft", *Excellent* PhD thesis.

9. Media (French, English, Romanian, Ialian and Spanish languages)

Dr Botez and her LARCASE team were interviewed by media, and broadcast interviews and articles were written on the research achievements of Dr Botez and her team, as seen in following sub-sections 9.1 and 9.2.

Please note that some articles are attached in PDF format on the webpage of the LARCASE because of the fact that they were written and archived by the ÉTS Communication team, other articles are still available on their initial webpages, and other articles are unavailable.

However, most of them are available for consultation, and is possible to read them by clicking on the LARCASE website

9. 1 Broadcast interviews regarding research achievements of Dr Botez and her team (18)

1. The title of the interview was " Presidency: Osmani will no longer travel through Skopje Airport (In English). Prof. Botez has been interviewed in English by Mrs Valbona Bytyqi on the 'Koha" Kosovo TV channel. The interview is available online, 2024,
2. The title of the interview was "Cercetator Profesor Doctor - Ruxandra Mihaela Botez" (In Romanian). The English translation is: "Researcher Professor PhD - Ruxandra Mihaela Botez"), Prof. Botez has been interviewed in Romanian by the "Universum VIP" Studios for the TV show called "Salut Romanesc din Montreal" (In Romanian). The interview is available online, 2023,
3. Film on the youtube website in English on the *SARES Awards Ceremony 2021* where Dr Botez obtained the Sustainable Aviation and Energy Research Society (SARES) Science Award, 2021,

4. Title in English: "Fly or not fly" (original title in French "Voler ou pas"). Four professors have been interviewed on Green Aircraft Technologies at the *Savoir Media – Couple de Nerds.* Dr Botez was one of them, 2019,
5. Title in English and in French: "Ruxandra Botez". Dr Botez was interviewed on the *Savoir Media – Couple de Nerds* regarding her achievements, 2019,
6. Dr Botez was interviewed by Mrs Veronica Balaj at the "Global and Regional in Environmental Protection GLOREP 2018" regarding the environmentally friendly aircraft research, in Timișoara, Romania, November 2018
7. Title in English and in Romanian: "NasulTV Canada – Ruxandra Botez (ETS) – Caleidoscop Canadian – 10 decembrie 2017". Dr Botez was interviewed by the team of the NasulTV Canada on her research activities. The interview was broadcasted in Romania and Canada, 10th of December 2017,
8. Dr Botez and all the LARCASE team students were interviewed on 1^{5th} of August 2017 by the NasulTV Canada. This interview on their activities at the ÉTS is not yet available to the public.
9. Title in English: "Oral History 17.10.28RB with Ruxandra Botez". This film is available at the Halifax Canada Museum of Immigration at Pier 21. The interview was taken by Mr Sinisa Obradovic to Dr Botez, 28th of October 2017,
10. Title in English: "NasulTv Canada – Broadcast from the 26th of January 2017 – Ruxandra Botez" (original title in Romanian: "NasulTv Canada – Emisiunea din 26 ianuarie 2017 – Ruxandra Botez"). Dr Botez was interviewed by the team of the NasulTV Canada on her research activities. The interview was broadcasted in Romania and Canada, 26th of January 2017,
11. Title in English: "The Enlighted Years: More Green Flight" (original title in French: "Les années lumière, Voler plus haut"). Dr Botez was interviewed by the journalist Mrs Chantal Srivastava at Radio-Canada. Radio-Canada is a very well broadcast channel. Five scientists were interviewed including Dr Botez on 2nd of October 2016,
12. Title in English: "Major Campaign of Finances for ETS" (original title in French: "Campagne majeure de financement ÉTS 2016"). The LARCASE team and the research aircraft flight simulator and the unmanned aerial system were filmed on 21st of April 2016,
13. Title in English: "Montreal, Third Aeronautical Town in the World" (original title in French: "Montréal, troisième ville aéronautique du monde"). In this video that has shown various aeronautical activities in Montreal, the internship student Clement D'Artiguez was shown while working on the Research Aircraft Flight Simulator for the Cessna Citation X Business Aircraft. The author of the video was Mr Laurent Vu, journalist at "Agence France-Presse" in France. Thus, this video was presented in France and in Canada in October 2012,
14. Title in English: "The Flight Simulator" (original title in French: "Le simulateur de vol"). Dr Botez and her students were filmed at the LARCASE while they were working on the Aircraft Research Flight Simulator. The authors of the video were: Mario Fradet, Mario Picard, David Châteauvert and Pierre Greco. The video was presented at the 'Campus' Emission, "Savoir" Channel, "Télé-Québec" on 6th of April 2011. The description of the TV show is on page 5 in the right upper corner of page 3 (TV Campus nr. 29) at
15. Dr Botez was shown getting the "Research and Technology Organization Scientific Achievement Award 2012" from the Defense Canada in Ottawa for her work within the NATO AVT-161 as Canadian team member. This ceremony took place on 20th of October 2011 in Ottawa, and is shown on the LARCASE youtube website at
16. Title in English: "Ruxandra Botez – Aircraft Modeling and Simulation Technologies" (original title in French: "Ruxandra Botez – Technologies de modélisation et simulation des aéronefs"). This video was produced at the ETS, and has shown Dr Botez explaining the Canada Research Chair in Aircraft Modeling and Simulation Technologies research axes in 10th of March 2011,

17. Title in English: "Romanian Destinies" (original title in Romanian: "Destine românești"), radio interview taken by Mrs Carmen Săndulescu, Bucharest, Romania, February 2007.
18. Title in English: "Teaching and research in Canada" (original title in Romanian: "Învățământ si cercetare in Canada", radio interview taken by Mrs Carmen Săndulescu, Bucharest, Romania, July 2004.

9.2 Text Interviews and articles (100)

1. In the article entitled Gala d'excellence: Ruxandra Botez recoit le Prix d'excellence du CA en recherche", it is mentioned that Prof. Botez obtained the Research Award at ÉTS on 11th of April 2024 at the Excellence Gala. The website address of this article written on 30th of April 2024 is
2. In the article entitled "Une autre reconnaissance prestigieuse pour Ruxandra Botez", it is mentioned that Prof. Botez was elected Fellow of the American Institute of Aeronautics and Astronautics AIAA. The same article was published on Linkedin, this article was written in French at ÉTS by Mrs Chantal Crevier, Communication Advisor, and published on the website of "Profs-ETS" on 8th of February 2024, and on the Linkedin Post at ÉTS
3. In the article entitled "2024 AIAA Fellows Induction Ceremony and Dinner", it is mentioned that Prof. Botez was elected Fellow of the American Institute of Aeronautics and Astronautics AIAA in 2024, all 23 Fellows will be celebrated at the AIAA Fellows Gala in Washington DC in the USA on 14th and 15th of May 2024, the AIAA website address is
4. Article title in French: "Recherche en genie aérospatial – Ruxandra Botez finaliste d'un Honoris Genius de l'OIQ"; Dr Botez was mentioned as one of the finalists of the "Ordre des Ingénieurs du Québec OIQ" awards competition, and this article was written in French Mrs Manon Lamoureaux at ÉTS, 27th of April 2022, and it was published on the ÉTS website
5. In the article entitled "Décarboner l'aviation: est-ce possible?", Dr. Botez was interviewed regarding the trajectories optimization for reduced fuel consumption and green aircraft technologies development, this article was written in French by Mr Etienne Plamondon and published in "Quebec Science" on 26th of October 2022 and on the website
6. In the article entitled "Génie aérospatial: La professeure Ruxandra Botez doublement élue Fellow", it is mentioned that Prof. Botez was elected Fellow of both the Canadian Academy of Engineering CAE and Canadian Aeronautical Society Institute CASI, this article was written in French on 25th of October 2022 at ÉTS by the "Service des communications et du recrutement étudiant",
7. In the article ("Discussion Post") entitled "Celebrate the Success of Women Leaders in Engineering" and posted on the website of the SAE International, Mrs Nicol Lachimia congratulated the winners of the "SAE International Award for Technical and Leadership Excellence Honoring Rodica Baranescu" (Dr Botez and Dr Chatal Parenteau).
8. Article title in English: "Green Aerospace: Another Award for Professor Ruxandra Botez"; it was written by Mrs Manon Lamoureaux at ÉTS on the SARES Science Award, 17th of January 2022, and in French: "Aérospatiale verte – Un nouveau prix pour la professeure Ruxandra Botez"; it was written by Mrs Manon Lamoureux at ÉTS on the SARES Science Award, 17th of January 2022, and it was published on the Université du Québec website at and on the ÉTS website at
9. Article title in English: "Ruxandra Botez: Aerospace Excellence at ÉTS", 2021, and it was published on the ÉTS website at
10. Article title in French: "Ruxandra Botez: l'excellence de l'aéronautique a l'ÉTS", 2021, and it was published on the ÉTS website at
11. The article "Morphing Structures reach new heights, from tests on Earth to Mars" was published in "Aerospace America 2021" in December 2021; it was written by Dr Jeffrey L. Kauffman. The research performed by the Adaptive Structures Technical Committee was described, including the research performed by the LARCASE team on Morphing Wing

projects lead at the LARCASE within the Canada Research Chair in Aircraft Modeling and Simulation,

12. Article Title in English: "Green Aircraft Technologies: The SAE 2020 Charles M. Manly Commemorative Medal to a LARCASE Team" (original title in French: "Technologies vertes en aéronautique: La médaille commémorative SAE 2020 Charles M. Manly à une équipe du LARCASE"), article published at ÉTS, 31st of March 2021, École de Technologie Supérieure.
13. Article Title in English: "Congratulations on Linkedin regarding the obtention of the SAE 2020 Charles M. Manly Memorial Award by two co-authors women (including Dr Botez) "; it was written by the SAE Foundation, 8th of March, 2021,
14. Article Title in English: "Aerospace: Ruxandra Botez is named Fellow of the Royal Aeronautical Society (RAeS)" (original title in French: "Aérospatiale: Ruxandra Botez est nommée Fellow de la Royal Aeronautical Society RAeS"); it was published at ÉTS and it concerned the invitation of Dr Botez by Dr Jonathan Cooper, the RAeS President, to become Fellow of the RAeS, 16th of February, 2021, École de Technologie Supérieure.
15. Interview Title in English: "CNN: Airbus A300: Plane that launched an empire". Dr Botez was interviewed by Mrs Maureen O'Hare at "CNN", 1st of June 2019,
16. Interview Title in English: "Ruxandra Botez: Passion for Flight and Excellence in Aeronautics" (original title in Romanian: "Ruxandra Botez: Pasiunea zborului si excelenta in domeniul aeronauticii"), article published in *Accent Montréal*, 3rd of June, 2019, Accent Montreal.
17. Interview Title in English: "How to mitigate the effects of turbulence", (original title in French: "Comment atténuer les effets des turbulences"). Dr Botez was interviewed by Mrs Danielle Vilany from the French Canadian newspaper "la Presse", 4th of May 2019, LaPresse+.
18. Article title in English: "Ruxandra Botez honored in Romania" (original title in French:"Ruxandra Botez honorée en Roumanie"); it was written by Mrs Brigitte Dion at ÉTS, 28th of February 2019, Universite Du Quebec.
19. Article title in English: "Marine Segui, LARCASE student, distinguished herself en Austria" (original title in French: "Marine Segui, étudiante au LARCASE, se distingue en Autriche"; it was written by Mr Sébastien Langevin at ÉTS, 14th of March 2018,
20. Article title in English: "New Initiative helps Aerospace Businesses commercialize their Innovations", article written by Mrs Renée Dunk at Concordia University on the CRIAQ-Mid-TDP_proposal-DPHM-1711 project, in which Dr Botez participated, 4th of June 2018, Concordia University.
21. Article title in English: "*Defining the aircraft of tomorrow*" (original title in French: "Définir ce que sera l'avion de demain"); it was written by Mr Sébastien Langevin on the activities of Dr Botez and her team, and also published in the *ÉTS Brochure de la recherche*, 11th of March, 2018
22. Interview title in English: "The heights and flight in the mathematical calculations. Talk with Full Professor, PhD, Ruxandra Mihaela Botez from the École de technologie supérieure in Montréal" (original title in Romanian: "Înaltimile si zborul in calculele matematice. Convorbire cu Full Professor, PhD, ing., Ruxandra Mihaela Botez de la École de technologie supérieure din Montréal"). L'interview was published in the book ''Convorbiti cu personalitati romanesti din Montreal - 2018''. Dr Botez was interviewed by Mrs Veronica Balaj, 25th of February 2018. Photos were taken following these interviews in a ceremony organized in Montreal; these photos of the ceremony are shown on the website
23. Article title in English: "Canada Research Chairs, Renewal for the professors Ruxandra Botez and Jacques De Guise" (original title in French: "Chaires de recherche du Canada, Renouvellement pour les professeurs Ruxandra Botez et Jacques de Guise"); it was written by Mr Sébastien Langevin, 24th of January 2018,
24. Article published at the University of Zagreb, Faculty of Transport and Traffic Sciences, Professional Meeting and Workshop on Program for Stimulation of Research and Innovation at the Faculty of Transport and Traffic Sciences PROM-PRO during 2015-2017. Dr Botez

and its LARCASE laboratory are mentioned on page 73, PROM-PRO-Karolina-Zbornik.pdf (unizg.hr)

25. Article title in English: "ÉTS Professor Ruxandra Botez Elected Associate Fellow in the AIAA"; it was written by the journalist Philippe Cauchi on 5th of October 2016, and it was published in the Info Aero Quebec Newspaper. In this article, it was mentioned the fact that Dr Botez was elected as AIAA Associate Fellow, that is a high distinction, Info Aero Quebec.
26. Article title in English: "The Yearly Challenge of Vulgarisation" (original title in French: "Le défi annuel de vulgarisation"). In this article, it was written on 3rd of April 2017 that Mr Georges Ghazi, PhD student working under Dr Botez' supervision, has obtained the 2nd award at ÉTS for his PhD thesis presentation at the competition of scientific vulgarisation at ÉTS, Le défi annuel de vulgarisation | Réseau de l'Université du Québec (uquebec.ca)
27. Article title in English: "Success Story: GARDN Project Key to a New Canada-Ukraine Collaboration"; it was published in the GARDN 2015-2016 Annual Report, and underlined the successful collaboration taking place between Dr Botez and the CMC Electronics Esterline team within the two GARDN projects. This collaboration attracted a new collaboration between CMC Electronics-Esterline and the Ukrainian company Antonov. This article is published on page 8 of the GARDN 2015-2016 Annual Report.
28. Article title in English: "A CRIAQ Award for a PhD Student" (original title in French: "Un prix CRIAQ pour une étudiante de doctorat"); it was written by Mrs Manon Lamoureux at the ETS on 16th of June 2016 on the obtention of the CRIAQ Award by Ms Andreea Koreanschi, PhD student working under the supervision of Dr Botez at the LARCASE, ÉTS,
29. Article title in English: "Close collaboration with NASA" (original title in French: "Une collaboration étroite avec la NASA"); it was written by Mr Francois Venne in the French Canadian newspaper called "Les Affaires" on 11th of June 2016, Les Affaires.
30. Article title in English: "Ruxandra Botez, Twenty years of collaboration in research with NASA" (original title in French: "Ruxandra Botez, Vingt ans de collaboration en recherche avec la NASA"); it was written by Mrs Emmanuelle Berthou at the ETS on 13th of May 2016,
31. Article title in English: "18 Students awarded by the American Romanian Academy" (original title in French: "18 étudiants recompenses par l'Académie Roumaine Américaine"); it was published on 20th of September 2016 and written by Mrs Manon Lamoureux at ÉTS on the 7 posters and 18 students awarded by the American Romanian Academy – all of them worked under the supervision of Dr Botez,
32. Dr. Botez also participated to events for the recruitment of women in Aerospace Engineering, such as the event called in English "The girls discover the aviation at Lachute" (in French: "Les filles découvrent l'aviation à Lachute"). She and her research associate Mr Oscar Carranza presented the activities of the LARCASE at this event that took place on 12th of March 2016. This event can be visualized on the website
33. The article "Better flight through shape-shifting materials" was published in "Aerospace America 2015" on page 8 in December 2015; it was written by Dr Louis Centolanza. The research performed by the Adaptive Structures Technical Committee was described, including the research performed by the LARCASE team in the CRIAQ MDO 505 project,
34. Article title in English: "Security tightened by airlines" (original title in French: "La securité resserrée par les compagnies aériennes"); it was written on 26th of March 2015, in the French Canadian newspaper "La Presse" by Mr Philippe Mercure, LaPresse.
35. Article title in English: "Ruxandra Botez, awarded with Venezia Award. An international aeronautical project awarded" (original title in French: "Ruxandra Botez, lauréate d'un prix Premio Venezia. Un projet international en aéronautique récompensé"); it was written at ÉTS by Mrs Stéphanie Benoit on 11th of June 2015, (PDF format on the LARCASE website) and on the ETS website
36. Article title in English: "International Project awarded at the CRIAQ Gala"; it was mentioned that the teams led by Dr Botez has won the Second Award for the CRIAQ MDO 505 project

in the CRIAQ on-going projects competition. This article was written by Mr Philippe Cauchi on 2nd of September 2014, and is available at Info Aero Quebec.

37. In the article entitled "We Pledge : Making an Impact for the next 25" in the frame of the Women Chair in Science and Engineering, Dr Botez wrote her pledge for women to pursue research at the LARCASE on 8th of December 2014, and thus to graduate a maximum of women
38. The article entitled "A Morphing Aircraft Wing" was written in 2014 by the NSERC team on the CRIAQ MDO 505 following an interview taken to Dr Botez. The grant value of the CRIAQ MDO 505 project led by Dr Botez was mentioned on the NSERC website
39. In the newspaper called "Revista Negocios Promexico", the article "Negocios / Hydra Technologies, Unmanned Innovation" was written in English in July 2014. On pages 28 and 29, the scientific collaboration between Hydra Technologies and LARCASE teams was mentioned at
40. Article title in English: "LARCASE ETS, SAE International disseminates an article of a research team" (original title in French: "LARCASE ÉTS, SAE International vulgarise un article de l'équipe de recherche"); it was written at the ETS by Mrs Chantal Crevier on 21st of November 2014 (PDF format on the LARCASE website) and on the ETS website
41. Article title in English: "Canadian Presence at The Greener Aviation: Clean Sky breakthroughs and worldwide status' conference took place in Bruxelles in Belgium between the 12th and 14th of March 2014"; it was written by the journalist Mr Philippe Cauchi in the "Info-Aero Quebec" newspaper, gave the details of the Greener Aviation 2014, and explained that Dr Botez' name was published on the short List of Papers at this conference, Info Aero Quebec.
42. Article title in English: "First Anniversary of the Internet Site Info Aero Quebec" (original title in French: "Premiere anniversaire du site internet Info Aéro Québec"); it was published by Aero Montreal on the 3rd of March 2014. In this article, the existence on-line of the "Info-Aero-Quebec" newspaper was mentioned, including the name of Dr Ruxandra Botez as one of its columnists and well-known experts
43. The article called "Research in adaptability" was published in "Aerospace America 2014" on page 12 in December 2014, and was written by Dr Louis Centolanza. This article referred to the research performed by the Adaptive Structures Technical Committee, thus research performed by the LARCASE team in the CRIAQ MDO 505 project was described,
44. Dr Botez's profile was considered as one of the most successful profiles of the Canadian Woman Mechanical Engineers. Ruxandra's profile was presented in the article 'CSME Women in Mechanical Engineering' by Dr Christine Wu from University of Manitoba, following an interview with Dr Botez. The article was published on 12th of June 2014 on the CSME website at and the profile of Dr Botez is visualized at
45. Article Title in English: "Excellence in Aerospace: A CRIAQ Award for an International Project of Ruxandra Botez" (original title in French: "Excellence en aérospatiale: Un prix CRIAQ pour un projet international de Ruxandra Botez"); it was written by Mrs Manon Lamoureux to mention the second-place award obtained by the CRIAQ MDO 505 international project team led by Dr Botez.
    This article was published on 10th of June 2014 on the ETS Communication website and on the ETS website of the Monthly Electronic Bulletin
46. Article Title in English: "Aerospace: Ruxandra Botez on the Short List of Greener Aviation Award" (original title in French: "Aérospatiale: Ruxandra Botez sur la liste courte du Prix Greener Aviation"), the name of Dr Botez was selected to be on the short list of names of best 20 among 200 presenters at the Greener Aviation 2014 conference. This article was written by Mrs Manon Lamoureux, and it was published on 6th of June 2014 on the ETS website of the Monthly Electronic Bulletin
47. Article title in English: "Scientific Popularization Award. Three PhD Students are awarded" (original title in French: "Prix de vulgarisation scientifique. Trois étudiants du doctorat se

distinguent"), it was mentioned that the PhD Student Roberto Felix Patron at the LARCASE received the Third-place Award at the ETS Discovery Day for his poster presentation. This article was written by Mrs Chantal Crevier, and it was published on the 31st of March 2014.

48. Article title in English: "Technology Update: ETS Researchers develop New Methodology for Wind Tunnel Calibration"; it was anonymous, and gave a scientific dissemination of an SAE International journal paper written by Dr Botez and her LARCASE team. This article was published on 12th of February 2013 in the "Aerospace and Defense Technology, The Engineers Guide to Design and Manufacturing Advances" at page 35, SAE International.
49. In the article entitled "Undergraduate Ceremony. Diplomas and Awards for the Undergraduate Students" (in French: "Collation des grades de baccalauréat. Des diplômes et des prix au 1er cycle"), the Excellence Award obtained by Miss Isabelle Cadrin at the LARCASE was mentioned. This article was written by Mrs Manon Lamoureux, and it was published on 8 of November 2013 at ÉTS,
50. The article entitled "Clarkson professor recently receives Forest R. McFarland Award from the Society of Automotive Engineers" describes the co-moderation by Dr Pier Marzocca from Clarkson University and Dr Botez of a panel of experts discussing missions and operations on civil and military UAVs at the 2013 AeroTech Congress & Exhibition in Montreal, Que., Canada, 22nd of October 2013,
51. The article entitled "MAAT Meeting 18th to 20th September 2013 in Montreal, Canada" was written on the achievements of the Multibody Advanced Airship for Transport (MAAT) European project team meeting that was organized by Dr Ruxandra Botez at the ETS. This article was published by the MAAT team on 15th of October 2013 on their website. The MAAT project is described in one interesting paper on the SAE website
52. The article entitled "ACHEON International R&D Cooperation with Canada" was written by the ACHEON European project team. ACHEON is a European project funded by FP7 Transport and aimed at developing breakthrough emerging propulsion technology for green air transport. The research axes discussed during the ACHEON team meeting at the ETS with the LARCASE team led by Dr Botez were described. This article was published by the ACHEON team on 23rd of September 2013,
53. The article entitled "CASI AERO Women on Aerospace Engineering a Soaring Success" presented 53 successful women in Aerospace Engineering at the Canadian Aeronautical Society Institute (CASI) Symposium that took place in Toronto. Dr Botez was one of these women. This article was published on 30th of April 2013 on the "Chair for Women in Science and Engineering" website.
54. The article entitled "Scientific Popularization: The PhD Students Ludwig Vinches and Mehdi Ben Salah have won" (in French: "Vulgarisation scientifique: Les doctorants Ludwig Vinches et Mehdi Ben Salah se distinguent") has referred at the third-place award including 250$. This award was won by Mr Souleymane Sidibe, Master's student from the LARCASE at the ÉTS Scientific Vulgarisation Competition. This article was written by Ms Marie Lefebvre, and it was published on 2nd of May 2013 on the ÉTS Communication website
55. Article title in English: "A third Award for ÉTS" (original title in French: "Un troisième prix au FEA pour l'ÉTS"); it was written by Mrs Manon Lamoureux at ÉTS in Montréal in 2013. In this article, it is mentioned that the Students Aerospace Forum (SAF) Third Award has been won by Mr Georges Ghazi, Master's student at the LARCASE. The SAF took place at University of Sherbrooke. The ETS Communication website is
56. Article in English: "Ruxandra Botez: Aeronautics School in Montreal: I always liked flying" (original title in Romanian: " Ruxandra Botez: un mugur al școlii de aeronautică din Montreal: mi-a plăcut zborul de cind mă știu"); it described the research activities of Dr Botez. This article was written by Mrs Laetitia Militaro following an interview with Dr Botez, and it was published on 15th of March 2013 in the Romanian Canadian Newspaper 'ZigZag' in Montreal.
57. Article in English:"The Presagis Award for the Best Simulation Application 2012 at the LARCASE" (original title in French: "Le prix Presagis Award for the Best Simulation

Application 2012 au LARCASE"); it referred to the award obtained by Dr Botez and her team for the Hawker 800 XP and Cessna Citation X simulation modeling using FLSIM. This article was written by Ms Manon Lamoureux at the ETS, and it was published on 7th of February 2013 on the University of Quebec communication website: University du Quebec.

58. The LARCASE team was one of the four winners of the 2012 Presagis Awards. Thus, the Presagis company has been proud to announce these winners on the page called "2012 Presagis Awards Winners" on their website.
59. Article in English: "Aerospace Engineering: Aerodynamics Improvement" (original title in French: "Génie aérospatial: améliorer l'aérodynamisme"); in this article, the Master student Francois Michaud working under the supervision of Dr Botez was interviewed regarding his research. This article was written by Mr. Mathias Marchal, and it was published on 31st of July 2012 in the French Canadian 'Metro' Newspaper in Montreal on the ETS Communications website:
60. Article in English: "Aeronautics - CRIAQ Award for a Project led by ETS" (original title in French: "Aéronautique – Prix CRIAQ pour un projet dirigé par l'ÉTS"); it was mentioned that the teams led by Dr Botez has won the Third-place Award for the project CRIAQ 7.1 in the CRIAQ completed projects competition. It was written by Mrs Manon Lamoureaux on 14th of June 2012, (PDF format on the LARCASE website) and on the ETS website
61. Article in English: "Jalisco Industry Contracts Agreements at the Aeronautical Exhibition" (original article in Spanish: "Industria Jalisciense logra contratos en Salon de Aeronautica"). This article was written by Mr Pedro Castillo on the UAS-S4 acquisition at the LARCASE, and it was published on 20th of June 2011 on the website of the newspaper 'Miranda Informatica'; Its summary is published on the LARCASE website
62. Article in English: "Aerospace Engineering: The ETS Students awarded at the SAF 2012" (original article in French: "Génie aérospatial: Les étudiants de l'ÉTS se démarquent au FEA 2012"). This article concerned the Second-place Award won in 2012 by the Master students Robin Calestreme and François Michaud from the LARCASE. This article was written by Mr Benjamin Larregain at the ETS on 13th of March 2012,
63. Article title in English: "Discover Day: Robin Calestreme is distinguished with his Research Project" (original article in French: "Journée Découvertes: Robin Calestreme se distingue avec son projet de recherche"). This article concerned the First Award obtained by Mr Robin Calestreme, Master Student of the LARCASE, following the 'Discovery Day' Competition at the ETS. This article was written by Mr Sébastien Langevin. This article was published on the 16th of April 2012 on the ETS Communications website
64. The RTO Scientific Award 2012 was given to the NATO AVT 161, in which Dr Botez worked on the X-31 research as officially appointed technical team member. The RTO scientific achievement award team nomination form is shown. The names of all representants and officially appointed technical team members from various countries indicated on pages 4-6, including Dr Botez' name are shown on this form
65. Article title in English: "The ESTACA Internship Students are Excellent" (original article in French: "Temoignage: Les élèves d'ESTACA sont d'excellents stagiaires"), Dr Botez has been interviewed, and she talked about the high quality of French Internship Students that she recruited from ESTACA. These students performed their internships at the LARCASE, and this article was published on page 5 in the 'Estaca Mouv' newspaper at ESTACA, Paris in France. The website of this article that was published on 5th of June 2011 is
66. Article title in English: "From LARCASE to GARDN: Green Airplanes for a Still Blue Sky" (original title in French: "Du LARCASE au GARDN: Des avions verts pour un ciel encore bleu"). This article was published in "Le Devoir" French Newspaper in Montreal, and it was written by the journalist Mr Réginald Harvey on 26th of February 2011. In this article, the expertise and experience of Dr Botez at the LARCASE, and as Canada Research Chair Tier 1 in Aircraft Modeling and Simulation Technologies were described. The website on which this article was published is: LEDEVOIR.

67. Article title in English: "Meet a Romanian Scientist". This article advertised the launching of Dr. Botez' Canada Research Chair in Aircraft Modeling and Simulation Technologies at the ETS on 3rd of February 2011, and it was published in the Newsletter no. 1/2011 at page 3 of the Romanian Embassy in Ottawa. The website on which this article was published is
68. Article title in English: "A Ceremony in honor of the donators" (original article in French: "Une céremonie en l'honneur des donateurs"). This article was written following the party that took place at ÉTS for the celebration of the subsonic wind tunnel donation to the LARCASE from McGill professors Michael Païdoussis and Stuart Price, April 25, 2011, and the donation letter is found at
69. Article title in English: "Launching of the Canada Research Chair of Professor Ruxandra Botez" (original title in French: "Lancement de la chaire de recherche de la professeure Ruxandra Botez"); it was written by Mrs Emmauelle Berthou at the ÉTS, 9th of February 2011,
70. Articles titles in English: "A Subsonic Wind Tunnel at the ÉTS" and "A Flight Simulator for Aircraft" Wind Tunnel for Aircraft Wings" (original titles in French : "Une soufflerie subsonique à l'ÉTS and "Un simulateur de vol qui donne des ailes"); both articles were published on the same page in the ÉTS newspaper L'***ÉTS@360*****,** Summer 2010,
71. Interview title in English: "Propeller, Yaw and Roll" (original title in French: "Helice, lacet et roulis"). Dr Botez was interviewed by Mr Jean-Francois Cliché and the article was published in the French Canadian newspaper *''LeSoleil''* on 27th of January 2011, LeSoleil.
72. Article title in English : Canadian Foundation of Innovation Leaders Grants" (original title in French : "Fonds des leaders de la Fondation Canadienne pour l'Innovation; it was written at ÉTS regarding the obtention of the Cessna Citation X Flight Simulator ceremony at the Discovery Day (in French: Journée Découvertes) at ÉTS, 17th of March, 2010,
73. Article title in English: "Italian delegation at Aerospace Innovation Forum"; it was published on page 1 in the *La Page, Newsletter of the Italian Chamber of Commerce,* Vol. 9.1, 2010,
74. Article title in English: "Aerospace Engineering: The Professor Ruxandra Botez obtains a Substantial Support" (original title in French: "Génie aérospatial. La professeure Ruxandra Botez obtient un soutien substantiel"); it described the Research Aircraft Flight Simulator (RAFS) obtained at the LARCASE, and it was published in *L'ÉTS @ 360,* Vol. 5(1), 2009, (PDF format on the LARCASE website) and on the ETS website
75. Interview title in English: "The Smart Aircraft Wing and Professor Ruxandra Botez" (original title in French: "L'aile d'avion intelligente et la professeure Ruxandra Botez"); it was published also on page 12 in the *Brochure de la recherche 2007-2008* at the ÉTS,
76. Article title in English : "The Professor Ruxandra Botez participates at research for less polluted airplanes" (original title in French: "La professeure Ruxandra Botez participe aux recherches pour des avions moins polluants"); it was written by Mr Sebastien Langevin at ÉTS on the GARDN first round project realized by Dr Botez and her team in collaboration with CMC Electronics; it was published on 15th of May 2009, (PDF format on the LARCASE webpage) and on the ETS website
77. Article title in English: "The Professor Ruxandra Botez obtains an important financial support to advance her research" (original title in French: "La professeure Ruxandra Botez obtient un important appui financier pour pousser ses recherches"); it was written by Mrs Manon Lamoureux at ÉTS on 01/08/2009.
78. Article title in English: "Three awards for ÉTS at the Students Aerospace Forum" (originai title in French: "Trois prix pour l'ÉTS au Forum des étudiants en aérospatiale"); it was written at the ÉTS on 11th of October 2008.
79. Article title in English: "Excellence Award 2007 – Ruxandra Botez is excellent in research" (original title in French : "Prix d'excellence 2007 Ruxandra Botez excelle en recherche ! " ; it was written by Mr Sébastien Langevin at ÉTS on 26th of November 2007, (PDF format on

the LARCASE website) and on the Annual Report of Quebec University website on page 58.

80. Article title in English: "Forum des étudiants en aérospatiale : Des étudiants de l'ÉTS se distinguent" (original title in French : "Forum des étudiants en aérospatiale : Des étudiants de l'ÉTS se distinguent") ; it was published at ÉTS by Mr Sébastien Langevin on 20th of November 2007,
81. Article title in English: "Three ÉTS Professors Pioneers of CRIAQ" (original title in French: "Trois professeurs de l'ÉTS pionniers du CRIAQ"); it was written by Mr Sébastien Langevin at ÉTS, 01/10/2007,
82. Citation as a world scientific personality in an article written by Mrs. Elena Stefoi, Romanian Ambassador to Canada, sent to the Romanian Communities of Canada. The article was entitled "Simboluri, date statistice şi experienţe contemporane", and it was published in the *Vatra* newspaper, October 2008.
83. Article title in English: "Aerospace Students Forum" (original title in French: "Forum des étudiants en aérospatiale"); it was published in *L'ÉTS @ 360°,* Vol. 4(2), Fall 2008.
84. Citation as a Romanian personality in the article "Comunitatea romanilor din Canada," 09/27/2007.
85. Citation as a Romanian personality who enriches Romanian-Canadian heritage in the special supplement of the publication "Nine O'Clock," dedicated to Canada Day, July 2007.
86. Article "Prix d'excellence 2007," published in *L'ÉTS @ 360°,* Vol. 3(2), Fall 2007.
87. Description of the CRIAQ 7.1 research project in which the the names of Dr Botez and the other researchers are listed. Article "ÉTS et Polytechnique: des partenaires de génie en recherche et développement!" in *Le Polyscope*, journal edited by the École Polytechnique de Montreal, 2007.
88. Article title in English: "The aeronautical and aerospace at its best!" (original title in French : "Le génie aéronautique et aérospatial à son meilleur!"); it was published on Dr. Botez's research activities and projects in both newspapers *Plein Vol* and on page 4 in the newspaper *Plan* on 9th and 10th of June 2007,
89. Interview title in English: "A Woman at Heights" (original interview in Romanian: "O femeie la inaltime"; it was written on 23rd of October 2006 by Mrs Simona Plopeanu in the Romanian newspaper *Pagini Romanesti*,
90. Interview title in English: "The Iron Woman" (original title in French: "La dame de fer"); it was published on page 4 in *the* ÉTS newspaper *ÉTS @ 360°,* Vol. 2(2), Fall 2006,
91. Article title in English: "Researchers travel to Canada; New Partnerships could result"; it was published on page 2 in the American newspaper *Xpress* (*NASA Dryden* publication) in Vol. 46(10) on 26th of November 2004, November X-Press (nasa.gov)
92. Interview title in English: "Mastering the Flight Critical Conditions" (original title in French: "Maîtriser les conditions critiques de vol"); it was published in *L'ÉTS @ 360°* on the CRIAQ 3.4 project achievements, January 2004.
93. Citation for Dr. Botez's role as a collaborator on a project funded by the Canadian Foundation for Innovation (CFI) in the article "Un projet de l'École Polytechnique reçoit une contribution de 223,104 $ de la Fondation Canadienne pour l'Innovation (FCI)", 5th of July 2004,
94. Interview title in English: "The Women in Science and Technology: The remarkable Realizations, an Exceptional Contribution" (original title in French: "Les femmes en science et en technologie: Des réalisations remarquables, une contribution exceptionnelle"); it was published at page 23 in *Gazette des femmes*, Vol. 25(6), March-April 2004.
95. Interview title in English: "The Aerospace Research organizes itself" (original title in French: "La recherche aérospatiale s'organise"), published in *Découvrir*, November-December 2003.
96. Citation as a scientific world personality in the article "Prezente canadiene in Romania debuteaza in mai la Bucuresti", published in *Romania Libera*, April 24, 2003.

97. Citation as a member of the organizing committee of the ARA Congress in the article *Tribuna noastra*, no. 28, in the paper entitled “Al XXVI-lea Congres annual ARA la Montreal,” and in the bulletin ”Calea de lumina”, 2001,
98. Citation as a Full Member of ARA Canada in the *American Romanian Academy of Arts and Sciences Newsletter*, 2000.
99. Citation on *Wikipedia* on the “List of Notable Canadians of Romanian Ancestry”,
100. Citation on Wikipedia on the ”Listă_de_români_din_Canada”,
Dr Botez is cited on this list in 2006 as Professor in the Automated Production Engineering Department at École de technologie supérieure in Montreal and Finalist in 2006 at the YWCA Women of Distinction Gala in the ‘’Education’’ category (original text in Romanian: profesoară la Département de génie de la production automatisée din cadrul Școlii de tehnologie superioară din Montreal. Finalistă în 2006 la Gala Femmes, categoria “Éducation”).

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Appendix 1
LARCASE Infrastructure

Research Aircraft Flight Simulator (RAFS) for the Cessna Citation X Business Aircraft
(developed in collaboration with CAE and Cessna)

Virtual Research Flight Simulator (VRESIM) for the CRJ-700 Aircraft
(developed in collaboration with CAE and Bombardier)

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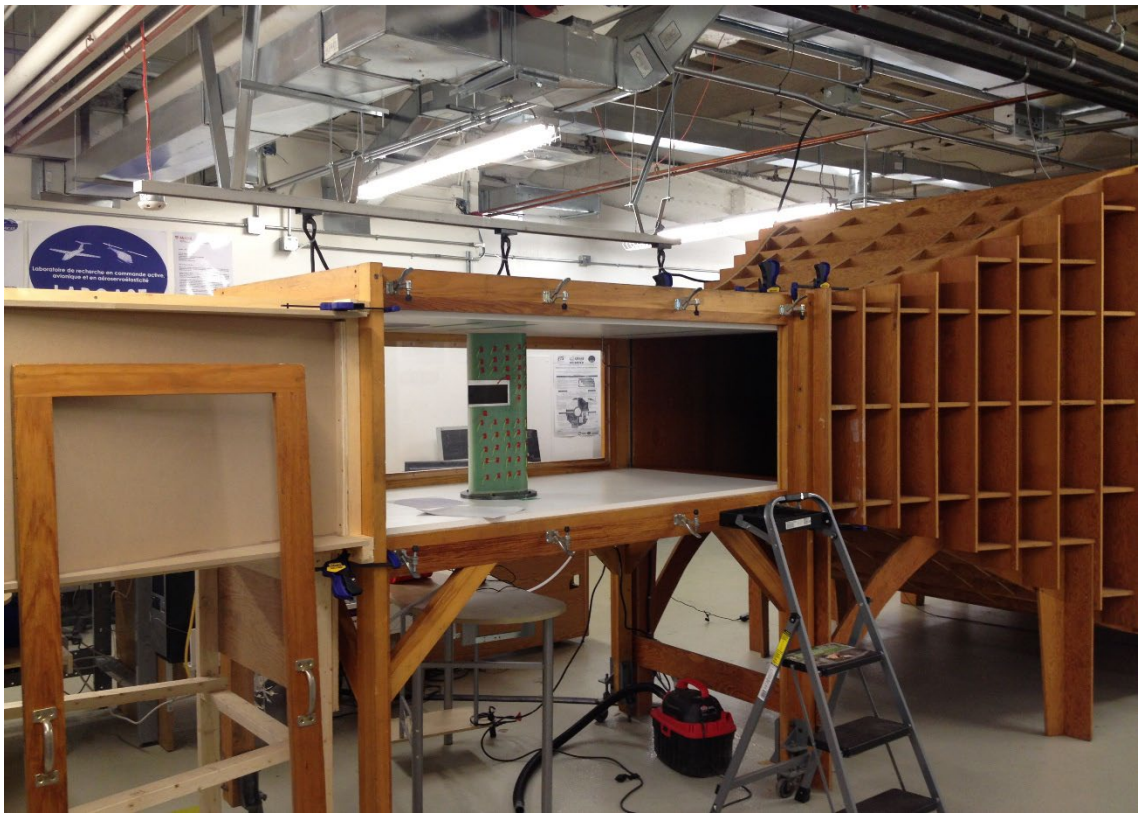

Price – Païdoussis Subsonic Blowdown Wind Tunnel (McGill University donation from Professors Michael Païdoussis and Stuart Price)

The autonomous aerial unmanned system UAS-S4 developed by Hydra Technologies

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Dr Botez with her LARCASE students' team in 2011 – photo taken with the occasion of the obtention of the *Canada Research Chair Tier 1 in Aircraft Modeling and Simulation Technologies* by Dr. Ruxandra Botez