



Europass Curriculum Vitae

Personal information

First name(s) / Surname(s) **Adrian Toader**

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Work experience

Dates	August 2006 – Present
Occupation or position held	PhD, Research Engineer
Main activities and responsibilities	Design, implementation and testing of GNC (Guidance Navigation and Control) algorithms for vehicles with vertical landing and take-off synthesis. Development of the on-line trajectory optimization algorithms for experimental flight testing on-board of the vertical take-off vertical landing vehicles, general implementation of the control laws for aerospace mechatronic systems (primary and secondary systems used in flight control actuation), vibration control and health monitoring of the mechanical structures using piezo smart actuators, aircraft flight control design, based on LQR/LQG, H-infinity synthesis methods also using modern approaches automated tuning, loop shaping techniques, structural H infinity. Simulation for unmanned aircraft systems, avionics architecture design and data acquisition using dedicated hardware and software, flight dynamics and aircraft flight performance assessment, numerical simulation of physical systems models of the aircrafts and actuation systems.
Name and address of employer	INCD INCAS – National Institute for Aerospace Research “Elie Carafoli”
Type of business or sector	Aerospace Research

Education and training

Dates	2000-2005	2005-2007	2007-2013
Title of qualification awarded	Dipl. Eng.	Msc degree	PhD degree
Principal subjects/occupational skills covered	Aerospace Engineering, Avionics, Aerospace Navigation		Aerospace Engineering, Handling qualities, Pilot-aircraft system stability analysis, Human pilot mathematical model
Name and type of organisation providing education and training	Univ. “Politehnica” Bucharest, Faculty of Aerospace Engineering		University of Craiova
Level in national or international classification	Bsc	MSc	PhD

Personal skills and competences

Real time data acquisition and control implementation using a National Instruments hardware and software platform, close loop control simulation using Matlab/Simulink package, embedded programming (basic level).

Mother tongue(s) **Romanian**

Other language(s)

Self-assessment

European level (*)

Language

Language

Understanding				Speaking				Writing	
Listening		Reading		Spoken interaction		Spoken production			
EN	Proficient	EN	Proficient	EN	Proficient	EN	Proficient	EN	Proficient
FR	Good	FR	Good	FR	Basic	FR	Basic		Basic

(*) [Common European Framework of Reference for Languages](#)

Social skills and competences

Good communication with team members

Organisational skills and competences

Task leader and project management.

Technical skills and competences

Electrical measurements, experimental setup for data acquisition, data acquisition.

Computer skills and competences

Matlab/Simulink, Auto coding (Simulink Coder), HIL (rapid prototyping) on real-time target machine (Speedgoat), National Instruments/Labview, C, Fortran and MathCAD programming, CATIA modelling, MS Office, Linux OS.

Other skills and competences

Radio amateur.

Additional information

Research project involvement in table below

Program/Project	Position
SMART AM 7032	Research Team Member
PNC DI DESCAS 71028	Research Team Member
PNC DI SIMCA 81031	Research Team Member
PNC DI SAHA 81036	Research Team Member
UEFISCSU Idei 1391	Research Team Member
Nucleu PN-09-17-03-04	Project Responsible

International Projects

Program/Project	Position
CESAR-FP6	Research Team Member
Clean Sky Robus AFC	Research Team Member
AFLoNext	Work Package Responsible
USACDF	Coordinator
Future Sky Project P3 Runway Excursions	Research Team Member
Demonstrator for Technologies Validation	Coordinator

Annexes

Published papers

Annex. Published papers

1. **Nonlinear control synthesis for hydrostatic type flight controls electrohydraulic actuators**, Ursu, I., G. Tecuceanu, F. Ursu, A. Toader (2007), *Proceedings of the International Conference in Aerospace Actuation Systems and Components*, Toulouse, June 13-15, pp. 189-194.

2. **Backstepping control synthesis for hydrostatic type flight controls electrohydraulic actuators**, Toader, A., I. Ursu, *The International Symposium on System Theory, Automation, Robotics, Computers, Informatics, Electronics and Instrumentation*, 18-20 October 2007 Craiova, Romania.

- 3 **Backstepping control synthesis for hydrostatic type flight controls electrohydraulic actuators**, Toader, A., I. Ursu, *Annals of the University of Craiova, Series Automation, Computers, Electronics and Mechatronics*, **4 (31)**, 1, 122-127.
4. **Robust aeroservoelastic control of high-aspect ratio wings**, Toader, A., L. Iorga, I. Ursu, *ICNPAA 2008: Mathematical Problems in Engineering, Aerospace and Sciences*, June 25-27, 2008, Genoa, Italy.
5. **Control of uncertain systems by feedback linearization with neural networks augmentation**, Ursu, I., A. Toader, G. Tecuceanu. Part I. Controller design, *INCAS Bulletin*, **1**, 1, 84-89.
6. **Neuro-fuzzy control synthesis for hydrostatic type servoactuators**, Ursu, I., G. Tecuceanu, A. Toader, C. Calinoiu, F. Ursu, V. Berar. Experimental results, *INCAS Bulletin*, **1**, 2, 136-150, 2009.
7. **PIO I-II tendencies case study. Part 1. Mathematical modeling**, Toader, A., I. Ursu, *INCAS Bulletin*, **2**, 1, 91-102, 2010.
8. **A unitary approach on adaptive control synthesis**, Ursu, I. A. Toader, *Mathematical Methods, Computational Techniques and Intelligent Systems*, pp. 71-78 (12th WSEAS Int. Conf. on Mathematical Methods, Computational Techniques and Intelligent Systems MAMECTIS '10, Kantaoui, Sousse, Tunisia, May 3-6, 2010), *Mathematics and Computers in Science and Engineering, A Series of Reference Books and Textbooks*, Edts.: A. Khallel, A. Hassairi, C. A. Bulucea, N. Mastorakis, ISBN: 978-960-474-188-5; ISSN: 1790-2769, Published by WSEAS Press, www.wseas.org, (ISI indexed).
- 9 **From limits of human pilot mathematical modeling to actuator rate limits. A PIO II tendencies case study**, A. Toader, I. Ursu at *Mathematical Methods in Engineering International Symposium*, Instituto Politecnico de Coimbra, Portugal, 21-24 October, 2010, CD published.
10. **Adaptive control of uncertain systems – A new unitary approach**, Ursu, I., A. Toader, G. Tecuceanu, *Proceedings of the Romanian Academy, Series A, Mathematics, Physics, Technical Sciences, Information Science*, **11**, 3, 236-244, (ISI indexed), 2010.
11. **Simultaneous active vibration control and health monitoring of structures. Experimental results**, Ursu, I., G. Tecuceanu, A. Toader, V. Berar, *INCAS Bulletin*, **2**, 2, 114-127, 2010.
12. **Control of uncertain systems by feedback linearization with neural networks augmentation. Part II. Controller validation by numerical simulation**, Ursu, I., A. Toader, *INCAS Bulletin*, **2**, 3, 2010.
13. **Strain Gauge Force Transducer and Virtual Instrumentation used in a Measurement System for Retention Forces of Palatal Plates or Removable Dentures** D.M. Ștefănescu, A.-T. Farcașiu, A. Toader. *IEEE Sensors Journal*, Vol. 12, No. 10, pp. 2968-2973, October 2012.
14. **New stabilization and tracking control laws for electrohydraulic servomechanisms**, I. Ursu, A. Toader, S. Balea, A. Halanay *European Journal of Control*, no 1, January 2013, pp 65-80, ISSN 0947-3580 Impact Factor (ISI): 1.2 2013.
15. **Towards a PIO II criterion: Improving the pilot, modeling** Toader, A., I. Ursu, *Advances in Intelligent Systems and Computing* Volume 187, 2013, pp 45-57, Springer-Verlag Berlin Heidelberg, ISSN: 2194-5357 (Proceedings of the 2011 International Conference on Communication, Electronics and Automation Engineering, 2013).
16. **Intelligent control of HVAC systems. Part I: Modeling and synthesis**, I. Ursu, Ilinca Nastase, S. Caluianu, Andreea Iftene, A. Toader, *INCAS Bulletin*, vol. 5, no. 1, pp 103-118, 2013.
17. **Intelligent control of HVAC systems. Part II: perceptron performance analysis**, I. Ursu, Ilinca Nastase, Sorin Caluianu, Andreea Iftene, George Tecuceanu, Adrian Toader, *INCAS BULLETIN*, Volume 5, Issue 3, pp. 127 – 135 ISSN 2066 – 8201, 2013.
- 18 **The electromechanical impedance method for structural health monitoring of thin circular plates**, C. Rugina, A. Toader, V. Giurgiutiu, I. Ursu, *Proceedings of the Romanian Academy, Series A, Mathematics, Physics, Technical Sciences, Information Sciences*, vol. 15, no. 3, pp. 272–282, 2014.
19. **Pilot modeling based on time delay synthesis**, A. Toader, I. Ursu, *Proceedings of the Institution of Mechanical Engineers - Part G: Journal of Aerospace Engineering (Proc IME G J Aero Eng)*, vol. 228, no. 5, pp. 740-754, April 2014.
20. **New Results Concerning SHM Technology Qualification for Transfer on Space Vehicles**, D. Enciu, I. Ursu, A. Toader, *Structural Control and Health Monitoring*, vol. 24, issue 10, e1992, <https://doi.org/10.1002/stc.1992>, IF 2.355, 2017.

- 21 Testing Platform for the Validation of Vertical Take-off and Vertical Landing (VTVL) Control Algorithms**, A. Toader and G. Tecuceanu, International Journal of Modeling and Optimization vol. 8, no. 4, pp. 236-240, 2018.
- 22 System Identification and Testing for a VTVL vehicle**, Ana-Maria Neculaescu, Alexandru Marin, Adrian Toader, Alexandru-Gabriel Persinaru, Alexandru-Mihai Cismilianu, Mihai Tudose, Camelia-Elena Munteanu, Ionel Popescu, Hans Strauch and Stephane Dussy, 8TH EUROPEAN CONFERENCE FOR AERONAUTICS AND AEROSPACE SCIENCES (EUCASS) DOI: 10.13009/EUCASS2019-925, 2019.
- 23 GNC algorithms numerical and testing validation for VTVL demonstrator**, Adrian TOADER, Ana-Maria NECULĂESCU, Alexandru Gabriel PERȘINARU, Alexandru Mihai CIȘMILIANU, Alexandru MARIN, Camelia Elena MUNTEANU, NMAS, Bucharest Romania, 2019.
- 24 Active robust control for wing vibrations attenuation**, Ioan URSU, Adrian TOADER, Daniela ENCIU, George TECUCEANU, INCAS Bulletin, vol. 14, issue 1, 2022.
- 25 Lyapunov-Malkin type approach of equilibrium stability in a critical case applied to a switched model of a servomechanism with state delay**, D. Enciu, A. Halanay, A. Toader, I. Ursu, International Journal of Control, <https://doi.org/10.1080/00207179.2022.2156929>, IF 2.102, WOS:000899924800001, 2022
- 26 Towards nonconservative conditions for equilibrium stability. Applications to switching systems with control delay**, A. Toader, I. Ursu, D. Enciu, G. Tecuceanu, Communications in Nonlinear Science and Numerical Simulation, vol. 121, pp. 107188. <https://doi.org/10.1016/j.cnsns.2023.107188>, IF 4.186, 2023
- 27 Input-to-state stability of a time-invariant system with control delay and additive disturbances**, Ursu, A. Toader, G. Tecuceanu, D. Enciu, Proceedings in Applied Mathematics and Mechanics (PAMM), e202300152. <https://doi.org/10.1002/pamm.202300152>, 2023
- 28 Input-to-state stability of a time-invariant system with control delay and additive disturbances**, I. Ursu, A. Toader, G. Tecuceanu, D. Enciu, GAMM 2023 – 93rd Gesellschaft für angewandte Mathematik und Mechanik, Conference, May 30 – June 02 2023, Dresden, Germany
- 29 Control synthesis and stability analysis of equilibria in a mathematical model of a pneumatic servosystem**, D. Enciu, A. Halanay, C.-A. Safta, A. Toader, I. Ursu, ICNPAA 2023 – ICNPAA: Mathematical Problems in Engineering, Aerospace and Sciences. D, 27-30 June 2023, online
- 30. Online convex optimization for a reusable vertical take-off and vertical landing demonstrator**, A.M. Neculăescu, T.P. Afilipoae, C. B. Briceag, A. Toader 2023 AIAA Science and Technology Forum and Exposition (AIAA SciTech Forum) 23 January - 27 January 2023, Harbor, National Harbor, MD & Online, <https://doi.org/10.2514/6.2023-1014>
- 31 The stability of a linear time-invariant system with control delay. Application to the stability of the aircraft control chain in conditions of atmospheric turbulence**, A. Toader, D. Enciu, I. Ursu, ICINCO 2023, 20th International Conference on Informatics in Control, Automation and Robotics, 13-15 November 2023, Rome, Italy