Curriculum vitae

Lucian Busoniu , 45 years old, Prof. dr. eng., research group lead

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1. Degrees

• Oct 2015: Habilitation (right to independently supervise PhD students) (**at 36 years old**).

• Jan 2009: PhD in control, Delft University of Technology (TUDelft), the Netherlands.

• Mar 2007: Doctoral school *Dutch Institute for Systems and Control* , the Netherlands.

• June 2004: Advanced studies, Technical University of Cluj-Napoca (UTCluj), Romania.

• June 2003: Masters (5-year degree) in control engineering, UTCluj, Romania. Valedictorian.

2. Academic experience

• 2013 – present: **Founder & lead** of the research group in Robotics and Nonlinear Control, **which spearheaded reinforcement learning for control in Romania, 6** permanent members and about 20 research students in employment; attracted over 5MEUR in funding under my lead.

• Oct 2011 assistant, Oct 2014 associate, Oct 2018 **full professor**, Automation Dept., UTCluj.

• Mar 2020: **Co-founder** of Robotics.AI startup in artificial intelligence for robotics.

• Jan 2012 – Sept 2013: CNRS Researcher, Research Center for Automatic Control of Nancy, France. Position obtained **via a highly selective competition with a success rate of ~5%** .

• Jan 2009 – Dec 2011: Postdoctoral researcher at INRIA, France, and TUDelft, Netherlands.

• Oct 2003 – Jan 2005: Teaching assistant, Automation Department, UTCluj.

3. Awards, honors, and notable achievements

• Author of more than **130 scientific publications**, including: 38 articles in journals (most of them in the ISI "red zone" Q1), 78 papers at international conferences, most of them indexed by ISI or IEEE, 7 book chapters, 1 book at the publishing house Taylor & Francis, 1 book edited at Springer.

• **Highest-cited researcher** from UTCluj (1500+ researchers), see Google Scholar of UTCluj.

• My first journal article, *A Comprehensive Survey of Multi-Agent Reinforcement Learning*, in IEEE Transactions on Systems, Man & Cybernetics Part C, received the 2009 **Andrew Sage Award for Best Article** and the **Highly Cited Paper Award** – top 1% of ISI cited papers. Nearly **3000** Google Scholar citations, the most important reference in the field.

• Monograph *Reinforcement Learning and Dynamic Programming Using Function Approximators*, Taylor & Francis CRC Press, has become a **major reference in the field**, with over 1300 Google Scholar citations.

• *Cum laude* distinction for the PhD thesis – **the highest in the Netherlands**, awarded to ~ 7% of PhD defenses at TUDelft.

• Over **3 million euros** obtained as PI or contact person in international and national funding calls (total value of projects won over 15 million euros).

• **Ranked first** for a faculty position at Université Charles de Gaulle Lille III.

• 21 times awarded PRECISI prize for publication in high-impact journal; one of these for **the top 1 journal** in Measurement & Instrumentation - IEEE Trans. on Industrial Electronics.

• Invited many times by **the media** to discuss research topics in reports on television, radio, and printed media, both international and Romanian.

• Best Presentation in Session, double award received at the 2004 IEEE-TTTC International Conference on Automation, Quality and Testing, Robotics (AQTR-04).

4. Scientometric indicators

• Over **9800 citations** and h-index 27 in Google Scholar

• Over 4100 citations and h-index 18 in ISI Web of Knowledge.

• On average over 39 ISI citations / article, **more than 4 times the average** in computer science (approx 8) and engineering (approx. 9) according to InCites.

5. Projects led as Principal Investigator / contact person (funded by competition; selection)

• 2024 – 2025: Unrestricted gift from Google DeepMind for project *Exploring architectural changes to SSM inspired by control theory*, proposed by dr. Răzvan Pașcanu.

• 2023 – 2026: Institution contact person for *DECIDE: AI Design of Decentralized Coopetitive Control over Networks*, PNRR C9 I8, PI C. Morărescu, 1.5MEUR.

• 2023 – 2026: Institution PI and proposal lead for the Horizon Europe Innovation Action project *SeaClear2.0: Scalable Full-cycle Marine Litter Remediation in the Mediterranean: Robotic and Participatory Solutions*, total budget 9 MEUR, UTCluj 600 KEUR.

• 2020 – 2023: Institution PI and proposal lead for the Horizon 2020 Research and Innovation Action *SeaClear: SEarch , identification and Collection of marine litter with Autonomous Robots*, total budget 5 MEUR, UTCluj 555 KEUR. Team of 7 people at UTCluj .

• 2021 – 2023: PI UEFISCDI Premiere Orizont 2020 *SeaMap* , 40KEUR. 4 pers.

• 2018 – 2020: PI UEFISCDI Young Teams *AIRGUIDE: A Learning Aerial Guide for the Elderly & Disabled*, 100KEUR. 6 pers.

• 2013 – 2016 UEFISCDI Young Teams *Reinforcement Learning & Planning for Large -Scale Systems*, 180KEUR. 4 pers.

• 2018 – 2018 : Institution lead of Erasmus+: *Co4AIR Computers , Cognition and Communication in Control: A strategic partnership*, total budget 350 KEUR, UTCluj 32 KEUR, 5 pers.

• 2015 – 2017: PI for **3 international cooperation projects** with France and Hungary: AUF NETASSIST, CNRS PICS, PHC Brâncusi AICONS, 36KEUR in total. Teams of up to 11 people.

6. Plenaries and keynotes

• July 2023: *Reinforcement learning and planning with applications to robotics*, **semi-plenary lecture** at the European Control Conference 2023, Bucharest, Romania.

• June 2018: *AI planning for nonlinear optimal control*, **keynote** at IFAC CESCIT, Faro, Portugal.

• Oct 2022: *RL and planning for robotics*, keynote at Romanian AI Days, Oradea, România.

• Feb 2019: *Overview of RL*, keynote at Timişoara Workshop on Machine Learning, România.

• Nov 2018: *Optimistic planning in MDPs*, keynote at Asian Workshop on ML, Beijing, China.

• Oct 2015: keynote at IROS Workshop on ML in Planning and Control, Hamburg, Germany.

• Dec 2013: keynote at Workshop on Intelligent Planning and Control, IEEE CDC, Florence, Italy.

• Dec 2011: keynote at Workshop on Optimal Adaptive Control, IEEE CDC, Orlando, USA.

7. Invitations to summer schools. Invited presentations (selection)

• Sept 2021: Grenoble Automatic Control School, France.

• July 2020: MIR Labs Webinar Series, global organization.

- Mar 2019: Winter school on RL, Dutch Institute of Systems and Control, Delft, The Netherlands.
- Jul 2018: Transylvanian Machine Learning Summer School , Cluj, Romania.
- Oct 2017: ACAI Summer School on RL, Nieuwpoort, Belgia.
- Sept 2019: North-Eastern University, Shenyang, China.
- Jan 2019: DeepMind, Paris, France.
- Nov 2018: Chinese Academy of Sciences, Beijing, China.
- Iun 2016: City University London, UK.
- Sept 2014: Italian Institute of Technology, Genova, Italy.
- Sept 2010: University of Liege, Belgium.
- Other invited presentations in Italy, France, Croatia, etc.

8. Event organization and editorial activity

• **Co-chair for publicity and special sessions** at the 1st IFAC Joint Conference on Computers, Cognition and Communication, 2025 (Padova, Italy).

• **Organizer** of the 6th IFAC ICONS – International Conference on Intelligent Control and Automation Sciences (Cluj-Napoca, Romania).

• Organizer of the 2015 (Cape Town, South Africa) and 2014 (Orlando, United States) editions of the IEEE Symposium on ADPRL – Adaptive Dynamic Programming and Reinforcement Learning .

• Organizer of *open invited events tracks* on machine learning in control at: ▪IFAC World Congress 2023 (Yokohama, Japan), ▪2020 (Berlin, Germany), ▪2017 (Toulouse, France), ▪IFAC ICONS 2022 (Cluj-Napoca, Romania).

• Organizer of special sessions on reinforcement learning at: ▪IEEE CDC 2016 (Las Vegas, United States); ▪IEEE ADPRL 2013 (Singapore) and ▪2011 (Paris, France).

• **Associate Editor** for ISI Q1 Engineering Applications of AI journal, 2015-present.

• Associate editor for conferences: IFAC World Congress 2023, 2020, 2017; European Control Conf. 2023; IFAC CESCIT 2021; IROS 2020; IFAC ICONS 2016; IFAC SYROCO 2015, etc.

9. PhD students

• **Main advisor**:
  o Finished: B. Yousuf, I. Lal (with **excellent qualifier**) Z. Nagy, Daniel Mezei.
  o In progress: M. Rosynski, F. Gogianu, M. Dragomir, T. Santejudean, E. Gorski, D. Rete
• **Co-advisor** for completed doctoral projects:
  o I. Grondman , Delft University of Technology, The Netherlands
  o G. Feng, Univ Polytechnique Hauts -de-France, France
  o M. Granzotto , Center de Recherche en Automatique de Nancy, France
  o K. Mathe , UTCluj .

In addition, led dozens of MSc and BSc projects, including 9 in the Netherlands (most completed *cum laude*).

10. Reviewing and committee activities

• **Vice-president** of the IFAC Technical Committee 3.2 Computational Intelligence in Control.

• Member of the IEEE Adaptive Dynamic Technical Committee Programming and RL.

• President of several doctoral committees at UTCluj.

- **Reviewer** of doctoral theses from abroad: University Politècnica de Catalunya, Spain; TUDelft, Netherlands; INRIA, France; Czech Technical University in Prague, Czech Republic.

- Reviewer for major international funding bodies, for example: NSERC Canada, EPSRC UK, NWO Netherlands, FWO & SBO Belgium, ANR France, National Science Center Poland.

- Reviewer for top journals in automatics (Automatica, IEEE TAC), AI (JAIR, IEEE TNNLS, IEEE TSMC, EAAI), and machine learning (JMLR, MLJ, Neurocomputing).

- Reviewer for top conferences in robotics (IROS, ICRA), control (CDC, ACC, ECC), AI and machine learning (ICML, NeurIPS, IJCAI).

- Selection committees for the entire range of positions from PhD student to full professor (e.g. at Politehnica Bucharest, University of Bucharest, Transylvania University of Brasov).

11. Notable international collaborations

- 2020 – present: Prof. Claudia Clopath, Imperial College London, and Dr. Razvan Pascanu, DeepMind, UK.

- 2017 – present: Prof. Dragan Nesic, University of Melbourne, Australia.

- 2017 – present: Prof. Thierry-Marie Guerra, Universite Polytechnique Hauts-de-France, France.

- 2015 – 2018: Prof. Jens Braband , Technische Universität Braunschweig and Siemens, Germany.

- 2012 – present: Prof. Constantin Morărescu, Prof. Jamal Daafouz , Dr. Romain Postoyan, Center de Recherche en Automatique de Nancy, France.

- 2010 – 2018 : Dr. Remi Munos , INRIA, France and DeepMind , UK.

- 2009 – present: Prof. Robert Babuska , Prof. Bart De Schutter , TUDelft , Netherlands.

- 2006 – 2011: Prof. Damien Ernst, University of Liege, Belgium.

12. Teaching. Visiting professor

- 2011 - present: UTCluj, as course lead:
  - *Reinforcement learning,* a new master's course in English.
  - *Learning control,* newly created master's course on learning for control.
  - *System Identification*, radically revised undergraduate course.
  - *Optimization*, undergraduate course.

- **Visiting professor** on several occasions at the University Polytechnique Hauts-de-France, and at Northeastern University, Shenyang, China.

- 2017: Master's invited course *Reinforcement Learning and Approximate Dynamic Programming* at the Politecnica de Valencia, Spain.

- 2014: invited by R. Munos to Microsoft Research Center New England, Boston, US.

- 2005-2011: Invited lectures TUDelft , Netherlands:
  - *RL for Robot Control* within the master course *Control Methods for Robotics*.
  - *RL* within the master course *Knowledge-Based Control Systems*.

13. Media appearances (examples)

- Television, e.g. ProTV news, in **prime time** – news at 7PM on November 25, 2021: Robot for underwater waste; Antena 1, June 23, 2021, Observator: Robots will clean underwatter litter.

- International print media (e.g. The Times), national (eg MediaFax), and local (eg Monitorul CJ).

- Radio (e.g. June 9, 2021, Radio Romania).