PERSONAL INFORMATION   Ion Necoară

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Sex: M | Date of birth: 20/09/1977 | Nationality: Romanian

POSITION

Professor

WORK EXPERIENCE

February 2009 - Present

Assistant Professor, Associate Professor, Professor

Politehnica Bucharest, Faculty of Automatic Control and Computer Science

▪ Teaching and research activities
▪ Head of *Optimization, Learning and Control Group* at Politehnica Bucharest
▪ Senior Researcher at the Institute of Mathematical Statistics and Applied Mathematics of the Romanian Academy (since 2021)
▪ In 2015, he obtained his habilitation in Systems Engineering and in 2021 in Mathematics.

EDUCATION

April 2007 – March 2009

Postdoc (Research Assistant): *Numerical optimization for large-scale problems*
KU Leuven, Belgium.

November 2002 – October 2006

Doctoral studies in *Applied Mathematics*
Technical University Delft, The Netherlands

October 2000 - July 2002

Master in Statistics and Optimization
University of Bucharest – Faculty of Mathematics and Computer Science

October 1996- July 2000

BA Mathematics
University of Bucharest – Faculty of Mathematics and Computer Science

PERSONAL SKILLS

Organisational/managerial skills

- Director for several national and international research projects (H2020, FP7, UEFISCDI – TE and PCE)
- Head of *Optimization, Learning and Control Group* composed of 6 faculty members, several master and phd students and several equipment's for research.

Competences

Supervising several bachelor/master students and 8 PhD students (Dr. A. Patrascu assist. Prof. at Univ. Bucharest; Dr. V. Nedelcu; Dr. D. Lupu assist. Profess. at UPB; Dr. L. Ghinea; Dr. Y. Nabou; Dr. F. Chorobura; Dr. N.K. Kumar; Drd. L. El Bourkhissi).

RECOGNITION

Awards

- Romanian representative at *European Control Association* (EUCA) since 2020.
- General Chair of European Control Conference 2023, organized in Bucharest.
- National Order *Faithful Service For Merit* from Romanian Presidency, 2017.
- *Fulbright* Visiting Professor fellowship at UNC (USA), 2017.
- *Excellence in Research* Award, in Engineering Sciences, Ad Astra, 2016.
- *Grigore Moisil* Award, in Information Technology, Romanian Academy, 2015.
- *Best Paper Award* in Journal of Global Optimization 2015 (ISI-Q1).
- *Ass*ociate Editor*: IEEE Transactions on Automatic Control* (IEEE*); Computational Optimization and Application* (Springer*); EURO Journal on Computational Optimization* (Elsevier).

COMPETENTE P

ADDITONAL INFORMATION

Publications

- Author of more than 180 research papers (140 ISI papers out of which 60 ISI journal articles Q1 and Q2 with cumulative impact factor > 200). Available at: www.acse.pub.ro/person/ion-necoara. List of 5 recent publications:
  - L. El Bourkhissi, I. Necoara, Complexity of linearized quadratic penalty for optimization with nonlinear equality constraints, Journal of Global Optimization, 91, 2025.
  - D. Lupu, I. Necoara, Exact representation and efficient approximations of linear model predictive control laws via HardTanh type deep neural networks, Systems and Control Letters, 186, 2024.
  - I. Necoara, F. Chorobura, Efficiency of stochastic coordinate proximal gradient methods on nonseparable composite optimization, Mathematics of Operations Research, doi: 10.1287/moor.2023.0044, 2024.
  - I. Necoara, Faster randomized block Kaczmarz algorithms, Siam Journal on Matrix Analysis and Applications, 40, 2019.
  - I. Necoara, Yu. Nesterov and F. Glineur, Linear convergence of first order methods for non-strongly convex optimization, Mathematical Programming, 175, 2019.
- About 3800 citations in GS and Hindex 31; 1400 citations in WoS and Hindex 21.

Visiting professor

University of North Carolina Chapel Hill, Universite Catholique de Louvain, NTNU, MIT, IMT Lucca, Cornell University, University Edinburgh, University Vienna, Linkoping University, etc.

Projects

Director of research grants with about 3 million EURO funding from H2020 – ITN, NO Grants, FP7 – ICT, UEFISCDI – PCE, UEFISCDI – TE:

- L2O-MOC, 2022 - 2024, UEFISCDI, PN-III-P4-PCE-2021-0720, no. 70/2022, 250k.
- ELO-X, 2021 - 2025, H2020, Marie Sklodowska-Curie Actions, GA no. 953348, 220k.
- TraDE-OPP, 2020 – 2024, H2020, Marie Sklodowska-Curie Actions, GA, no. 861137, 440k.
- ELO-Hyp, 2020 - 2023, NO Grants, UEFISCDI, no. 24/2020, 380k (coordinator, total value 1.2 mil).
- ScaleFreeNet, 2017 – 2019, PN-III-P4-ID-PCE-2016, UEFISCDI, no. 39/2017, 200k.
- MoCOBiDS, 2015 – 2017, PNII-RU-TE 2014, UEFISCDI, no. 176/01.10.2015, 120k.
- EMBOCON, 2010 – 2013, FP7 - ICT (STREP), GA no. 248940, 400k.
- METNET, PNII-RU-TE 2010, 2010 – 2013, UEFISCDI, no. 19/11.08.2010, 150k.

FIELDS OF INTEREST

- Theory and methods for Convex – Stochastic - Big Data Optimization.
- Developing optimization algorithms with a focus on structure exploiting.
- Mathematical guarantees about performance of numerical optimization algorithms.
- Applying optimization techniques for developing new advanced controller design algorithms for complex systems (Embedded and Distributed Control/Model Predictive Control).

Current research topics

- Practical applications include: Machine Learning, Big Data Models, Mining and Data Analytics (smart electricity grids, traffic networks, weather forecasts, distributed control, compressive sensing, image/signal processing, health), Embedded Control, Control of Robots, Automotive Industry.

Prof. Dr. Ion Necoara

Automatic Control and Systems Engineering Department

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