



Andrei Arusoiaie

Curriculum Vitae

Education

- 2006–2009 **Bachelor in Computer Science**, *Alexandru Ioan Cuza University, Iași, GPA – 9.63.*
Degree holder's ranking position: 4 out of 209
Psychopedagogical module: level 1, *Alexandru Ioan Cuza University, Iași, Teaching Training Department.*
- 2009–2011 **Master in Computer Science**, *Alexandru Ioan Cuza University, Iași, GPA – 9.93.*
Specialised in Distributed Systems, Degree holder's ranking position: 1 out of 7
Psychopedagogical module: level 2, *Alexandru Ioan Cuza University, Iași, Teaching Training Department.*
- 2011–2014 **PhD in Computer Science**, *Alexandru Ioan Cuza University, Iași, Honors – Summa cum laudae.*
Defended on September 27, 2014.

PhD Thesis

- Title *A Generic Framework for Symbolic Execution: Theory and Applications*
- Supervisors Professor Dorel Lucanu (UAIC, RO) & Senior Researcher Vlad Rusu (INRIA Lille)
- Description This thesis proposed a framework for symbolic execution which was parametric in the operational semantics of programming languages. The framework was formally defined and proved correct, while its implementation was integrated in the K framework and used for generic program verification.

Experience

Professorship

- 2019/03/1–
present **Associate Professor**, FACULTY OF COMPUTER SCIENCE, Iași.
- Courses:
- Principles of Programming Languages
 - Logic for Computer Science
 - Blockchain: Foundations and Applications

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- 2016/03/1–2019/09/1 **Lecturer**, FACULTY OF COMPUTER SCIENCE, Iași.
 Courses:
 - Principles of Programming Languages**Research Positions**
- 2018/01/1–2020/01/1 **Director**, FACULTY OF COMPUTER SCIENCE, Iași, UAIC Grant - UAIC G08/03-01-2018.
 Role: Principal Investigator, Topic: Certifying programs that run on the blockchain.
- 2016/11/1–2018/11/31 **Researcher (III)**, FACULTY OF COMPUTER SCIENCE, Iași, National Grant - PN-III-CERC-CO-BG 2016; 55BG/2016.
 Role: Co-Investigator. Main responsibility: customise the clang static analyser for BitDefender - an antivirus company.
- 2014/10/3–2016/02/28 **Postdoctoral Researcher**, INRIA, Lille, France.
 Role: member of the DREAMPAL team.
 Main achievements:
 - Learned Coq - an interactive theorem prover.
 - Certified a procedure for program verification based on symbolic execution in Coq.
 - Used the procedure to prove that the Knuth-Morris-Pratt string matching algorithm is correct.
- 2013/12/16–2014/11/5 **Research Assistant**, FACULTY OF COMPUTER SCIENCE, Iași, Grant: POSDRU-137750 - Doctoral and postdoctoral programs.
 Role: (the only) developer of the K framework support for generic symbolic execution.
 Main achievements:
 - The first version of the K compiler with generic support symbolic execution.
 - The first generic prover based on symbolic execution and Matching Logic.
- 2010/06/24–2013/12/15 **Research Assistant**, FACULTY OF COMPUTER SCIENCE, Iași, *European Grant* DAK: An Executable Semantic Framework for Rigorous Design, Analysis and Testing of Systems; 161/15.06.2010, SMISCSNR 602-12516.
 Role: main developer of the K tool for compiling language definitions.
 - Programming skills: Perl, C, Maude, Java, K;
 - Software engineering: code management (svn, git), testing, continuous integration;
 - Main achievement: the first version of the compiler that compiled the K definition of C.

Grants

- 2018–2020 **Certification of computer programs using a proof assistant**, *University Grant: UAIC-G08/2018*, Role: director, Value: \$10k.
- 2016–2018 **Increasing immunity to Zero-day attacks through static analysis.**, *National Bridge Grant: 55BG/2011.6/2016*, Role: member, Value: \$100k.
- 2013–2014 **Doctoral and Postdoctoral programs support for increased competitiveness in Exact Sciences research**, *POSDRU 159/1.5/S/137750*, cofinanced by the European Social Found within the Sectorial Operational Program Human Resources Development, Role: member, Value: \$10k.
- 2010–2014 **DAK: An Executable Semantic Framework for Rigorous Design, Analysis and Testing of Systems**, *Contract 161/15.06.2010, SMISCSNR 602-12516, funded by EU*, Role: member, Value: \$1m.

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Events

- Important Invited Talks
- The Eighth Congress of Romanian Mathematicians - CMR 2023;
 - International School on Rewriting - ISR 2021;
 - Working Formal Methods Symposium - FROM 2020;
 - Mathematical Foundations of Informatics - MFOI 2020;
 - The Eighth Congress of Romanian Mathematicians - CMR 2015.
- Organisation
- Summer School on Language Frameworks SSLF-2012;
 - Conferences: Working Formal Methods Symposium FROM 2017, 2018, 2022; WoLLic 2022

Awards

- 2019 ANIS - Fintech award for introducing a new course "Blockchain: Foundations and Applications" to master students. https://anis.ro/povesti_suces/emanuel-onica-andrei-arusoae/

Computer skills

- Advanced blockchain technology – smart contracts, functional programming (Haskell), proof assistants (Coq), analysis and formal verification of programs

Research Communications and Dissemination

- 2023 Invited talk at the *The Tenth Congress of Romanian Mathematicians* in Pitești, Romania
- 2021 Lecturer at the *International School on Rewriting* in Madrid, Spain
- 2019 Paper presentation at the *Formal Methods* conference in Porto, Portugal
- 2015 Invited talk at the *The Eighth Congress of Romanian Mathematicians* in Iași, Romania
- 2009 Paper presentation at the *Software Language Engineering* conference in Indianapolis, IN, USA
- 2009 Paper presentation at the *Rewriting Logic and Its Applications* workshop in Tallinn, Estonia

Languages

Romanian **Mothertongue**

English **Advanced**

French **Basic**

Listening, Reading, Speaking, Writing

Basic words and phrases only

Other Interests

- Mathematics
- World-wide Politics
- Physics
- International Relations

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