

## Andrei Arusoaie

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### Personal information

Full name: Andrei Arusoaie  
Date of birth: November 26, 1987  
Nationality: Romanian  
Gender: Male  
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### Education

**Doctor of Philosophy in Computer Science**    October 2011-September 2014

Dissertation: *A Generic Framework for Symbolic Execution: Theory and Applications*

Honors: *Summa cum laude*

Advisors: Prof. Dr. Dorel Lucanu, Researcher Dr. Vlad Rusu

Faculty of Computer Science, Al. I. Cuza University, Iași, Romania

**Master Degree in Distributed Systems**    October 2009 - July 2011

Faculty of Computer Science, Al. I. Cuza University, Iași, Romania

**Advanced Level of Teaching Computer Science**    October 2009 - July 2011

Department of Preparing Proffesoral Staff, Al. I. Cuza University, Iași, Romania

**Bachelor Degree in Computer Science**    October 2006 - July 2009

Faculty of Computer Science, Al. I. Cuza University, Iași, Romania

**Pedagogy and Teaching of Computer Science**    October 2006 - July 2009

Faculty of Computer Science, Al. I. Cuza University, Iași, Romania

### Course profile

Computer Architecture	Formal Methods in Software Engineering
Operating Systems	Graph Algorithms
Coding Theory and Cryptography	Artificial Intelligence
Computer Graphics	Machine Learning
Embedded Systems	.NET Programming
Java Enterprise Edition	Workflow Modeling
Security Protocols	Distributed Operating Systems
Distributed Systems Algorithms (MPI)	Formal Languages, Automata and Compilers

## Computer skills

Languages: High-Proficiency: Java, Perl, C#, K  
Medium-level: Maude, C, Python, C++,  $\text{\LaTeX}$   
Bash, Lisp, Prolog  
Basic-level: SQL, XQuery, SPARQL  
Operating Systems: Windows, Linux, and Mac OSX  
Development Tools: IntelliJ Idea, Eclipse, NetBeans, Visual Studio,  
make, ant, JUnit, Jenkins

## Research experience

**Postdoc Researcher** October 2014 - present  
Currently employed as a postdoc researcher at INRIA Lille-Nord Europe. My research topic is certified program verification.

**Research Assistant** December 2013 - October 2014  
I was one of the members of the Formal Methods in Software Engineering group, mainly involved in developing a framework for symbolic execution and a program verification tool. Part of my work included the collaboration with the Formal Systems Laboratory at the University of Illinois at Urbana-Champaign for improving the K framework (a framework for giving semantics to programming languages). Main responsibilities:

- Researching and developing a framework for symbolic execution.
- Designing and implementing the symbolic execution framework on top of the K framework.
- Designing and implementing a tool for program verification based on symbolic execution and reachability logic.
- Working with my colleagues on the design and features of the K framework.

**Research Assistant** June 2010 - December 2013  
I was employed as a research assistant at Faculty of Computer Science and paid from grant DAK (<https://fmse.info.uaic.ro/grants/DAK/>). I was one of the main developers of versions 2.0 and 3.0 of the K-framework, having a strong collaboration with the Formal Systems Laboratory at the University of Illinois at Urbana-Champaign. My main responsibilities included:

- Designing and developing a front end compiler for K definitions.
- Designing and developing a tool for running real (interactive) programs using the K definition of a programming language.
- Involved in implementing features of the K framework for real-life languages (e.g. the K semantics of C)
- Researching and developing a framework for symbolic execution.
- Working with other colleagues on new features.
- Monitoring performance and automatic testing of the K Framework.
- Performing maintenance, providing user support and writing documentation.

## Member in Research Projects (grants)

- DAK - *An Executable Semantic Framework for Rigorous Design, Analysis and Testing of Systems*, Contract 161/15.06.2010, SMIS-CSNR 602-12516, URL: <https://fmse.info.uaic.ro/grants/DAK/>
- POSDRU - *“Doctoral and Postdoctoral programs support for increased competitiveness in Exact Sciences research”* cofinanced by the European Social Found within the Sectorial Operational Program Human Resources Development 2007 2013, Contract POSDRU/159/1.5/S/137750, URL:<http://burse-uaic.ro/>

## Teaching experience

### Teaching Assistant

October 2013 - July 2013

Assisting my professor in teaching the "Algorithm design" classes for undergraduate students.

- Teaching the main programming paradigms to my students.
- Responsible for partial examination and grading of students.

### Teaching Assistant

February 2012 - June 2012

Assisting my professor in teaching the "Principles of Programming Languages" classes for undergraduate students.

- Responsible with helping students in the laboratory.
- Preparing and conducting two lectures during the semester.
- Teaching (all types of) Operational Semantics as an introduction to the K-framework.
- Responsible for partial examination and grading of students.

## Additional information

### Summer schools

- Attended the NII Summer School on Coq 2014 held in Shonan Village, Japan, between 25-29 august. The objective of this school was to teach the use of the Coq proof assistant that has received the SIGPLAN Programming Languages Software 2013 Award and the 2013 ACM Software System Award. It consisted of lectures and practices in English by internationally renowned experts in Coq.
- Attended the Summer School on Software Systems Safety 2013 (MOD'13) held in Marktoberdorf, Germany, between 29 july - 11 august. I was selected as participant from more than 1000 applications all around the world and I was the 4th student which obtained a NATO grant consisting in 1300 euro to attend this event.
- Attended the Summer School on Language Frameworks 2012 (SSLF12) as part of the organising team. Besides taking care of small administrative matters, I also had to prepare the presentation of our tool. The summer school was centered around six state-of-the art language frameworks which provide tool support for programming language designers.

### Internships

- *INRIA 2013.* Attended a four-weeks internship at Inria Lille - Nord Europe in Summer, 2013. The internship was focused mainly in developing a generic program verifier based on Symbolic Execution and

Reachability Logic. I have developed a (Java-based) tool called **kcheck** which takes the K semantics of a programming language and proves some given program properties using the language semantics and symbolic execution.

- *INRIA 2010*. Attended a six-weeks internship at Inria Lille - Nord Europe in Fall, 2010. The internship was focused mainly in developing a formal semantics of Object Constraints Language (OCL) meant to be used in verification of UML models. I have developed the K semantics of OCL and exemplified how it can be used in practice on an UML-like modelling language.
- *XWiki 2008*. Attended a three months internship as a Java-web developer at XWiki-Software in Summer, 2008. I have created a chat application on XWiki Workspace platform. It was designed to exchange private messages and files among the XWiki employees.

### **Social skills and competences**

Ability to work in teams

Pair programming experience

### **Creative skills and competences**

Brainstorming, the ability to improvise, to synthesize, and to put up-to-date

### **Analytical skills and competences**

Capacity of analyzing, observing, evaluating, problem-solving, monitoring, researching and investigating

### **Spoken Languages**

Romanian - native

English - C2-C1-C1 (Understanding-Speaking-Writing)<sup>(\*)</sup>

French - A2/A1/A1 (Understanding/Speaking/Writing)<sup>(\*)</sup>

(\*) <http://europass.cedefop.europa.eu/en/resources/european-language-levels-cefr>

### **Driving License**

Yes (categories: B, BE, C, CE)

**Extra-curricular activities** Watching documentaries and TV programs about nature, quantum physics, and religion.

I enjoy driving, playing pool and football, beside biking and hiking in the mountains.