

Cristian Andrei GHERGHINA

Place of birth Bucuresti, Romania

Research Interests

My interests include programming languages semantics, program analysis, specification logics, program verification. More specifically, I have been investigating the development of specification logics aimed at helping program verifiers handle richer programming languages. As such I had the chance to be part of the team behind the SLEEK separation logic prover and the HIP program verifier.

Academic experience

Research projects

- SLEEK an entailment checker for separation logic with frame inferring capability ([more](#))
- HIP an automated verification system based on separation logic for an imperative language ([more](#))

Conference papers

- Decision Procedures Over Sophisticated Fractional Permissions. (APLAS 2012)
Xuan Bach Le, Cristian Gherghina, Aquinas Hobor
- A Specialization Calculus for Pruning Disjunctive Predicates to Support Verification. (CAV 2011)
Wei-Ngan Chin, Cristian Gherghina, Razvan Voicu, Quang Loc Le, Florin Craciun, Shengchao Qin
- Structured Specifications for Better Verification of Heap-Manipulating Programs. (FM 2011)
Cristian Gherghina, Cristina David, Shengchao Qin, Wei-Ngan Chin
- Barriers in Concurrent Separation Logic. (ESOP 2011)
Aquinas Hobor, Cristian Gherghina
- A Specification Logic for Exceptions and Beyond. (ATVA 2010)
Cristian Gherghina, Cristina David
- Translation and optimization for a core calculus with exceptions. (PEPM 2009)
Cristina David, Cristian Gherghina, Wei-Ngan Chin

Journal papers

- Barriers in Concurrent Separation Logic: Now with Tool Support! (LMCS-ESOP 2011)
Aquinas Hobor, Cristian Gherghina

Demos & Posters:

- A HIP and SLEEK verification system. (OOPSLA Comp 2011)
Wei-Ngan Chin, Cristina David, Cristian Gherghina
- Automated Verification Using Unified Control Flows. (TASE 2009 - best poster award)
Cristian Gherghina, Cristina David
- Implementing a Modular OO Verifier. (APLAS2007)
Cristian Gherghina, Cristina David, Huu Hai Nguyen, Wei-Ngan Chin

Education

- 2008 – 2012 Pursued a PHD under the supervision of Prof. Chin Wei Ngan, National University of Singapore
Received the Dean's Graduate Research Excellence Award . The award is given to senior PhD students who have made significant research achievements during their PhD study. Recipients of this award must produce strong evidence of sustained research achievement during their course of study.
- 2011 summer Research internship on program analysis at the ROSEAC Center, Seoul National University
Developed a Hoare logic for an imperative language with multistaging constructs
- 2008 June Summer school on Programming Languages, Analysis and Verification, MSR Bangalore
- 2007 summer Research internship on program verification, National University of Singapore
Extended the HIP verifier to allow for OO verification
- 2002-2007 BS Computer Engineering, Major in Operating Systems and Compilers, (GPA 9.53, top 3%)
Automatic Control and Computer Faculty, Universitatea Politehnica Bucuresti

Work experience

Research

- 2012 – present Research associate in the programming languages group at NUS, part of the HIP/SLEEK program verifier project

Teaching

- 2013 Spring CS3234 Logic and Formal Systems, invited lecture on program verification and tools
- 2010 Fall CS1102 Data structures and algorithms, lab coordination and grading
- 2010 Spring CS5202 Foundation in Programming Languages, grading
- 2009 Fall CS1102 Data structures and algorithms, teaching assistant and grading
CS4212 Compiler Design, assignment design and grading
- 2007 Fall Microprocessor-based Systems Design, teaching assistant

Industry

- 2006– 2007 Wireless Mobile System Group Freescale Romania
I was involved in the development of java scripts for automatic testing of the functionality of the Freescale 3G platform and protocol stack.
- Summer 2006 Freescale Romania , Zigbee development team
My responsibilities included development of test scripts for automatic testing of the Freescale implementation of the Zigbee protocol stack (special interests stability and reliability of a Zigbee network).
- Summer 2005 Freescale Romania, the software tools team
As part of the Wireless Mobile System Group I was involved in the development of a tool for configuring and testing mobile devices.

Languages

- Romanian – native speaker
- English – fluent/proficient in reading, writing, and speaking. Four years working in English speaking environments.
- German – reading/speaking elementary

References available on request