Radu BANABIC

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Interests

I work on automated fault injection–given a system under test, I am interested in how it reacts to bad inputs from its environment. Bad inputs can occur as a result of failures in the environment, or as the result of malicious users. I developed a technique that uses dynamic analysis on both the system under test and its environment and systematically discovers inputs that the system under test accepts as valid, yet no correct environment could ever generate. These are the inputs that are otherwise hard to test and, in our experience, can lead to tricky bugs that compromise systems.

Education

2009–	**École Polytechnique Fédérale de Lausanne (EPFL), Switzerland** *PhD Candidate* • Topic: Reliability of distributed systems
2005−2009	**Technical University of Cluj−Napoca, Romania** *BSc. in Electrical Engineering & Computer Science* • Thesis: Cloud-based Fault Exploration - Automating Fault Injection • GPA: 9.92/10

Research Experience

2012	**Internship** *IBM Research*, Zurich, Switzerland I worked on a distributed storage algorithm designed for cloud computing. My work involved both theoretical aspects, such as designing and proving the algorithm, and practical aspects, as I implemented the algorithm in an existing framework.
2008, 2009	**Summer Internship** *EPFL*, Lausanne, Switzerland I worked with Prof. George Candea on automated fault injection. I implemented a test controller that decides what, when and where to inject a fault in a system under test. The controller uses a metaheuristic algorithm in order to adapt to the system under test.
2008	**Research Assistant** *Technical University of Cluj−Napoca*, Cluj-Napoca, Romania I developed and implemented a model for detecting automobile window pillars in live images, in the scope of a research project in cooperation with Volkswagen AG.
2006	**Research Assistant** *Technical University of Cluj−Napoca*, Cluj-Napoca, Romania I implemented the A* algorithm in both software (Java) and hardware (VHDL) in the frame of the "Multiagent Hardware System" project.

Industry Experience

2007−2008	**C++ Developer** *Fortech*, Cluj-Napoca, Romania • Software developer for a video management system. Used COM, Javascript and XML. • Main developer for communication server augmentation, in a 3D design collaboration system. Provided on-site assistance to client in Germany at the end of the project.

Professional Service

- **PC member:** Eurosys 2013 Shadow PC
- **External Reviewer:** SOSP 2013, HotOS 2013, SOCC 2012, USENIX 2009, USENIX 2011, SOSP 2011, Eurosys 2011, HotOS 2009

Publications

- **R. Banabic**, G. Candea, R. Guerraoui. Finding Trojan Message Vulnerabilities in Distributed Systems. In ASPLOS 2014. (Acceptance rate: 22%).
- **R. Banabic**, G. Candea. Fast Black-Box Testing of System Recovery Code. In EuroSys 2012. (Acceptance rate: 15%).
- **R. Banabic**, G. Candea, and R. Guerraoui. Automated Vulnerability Discovery in Distributed Systems. In 7th Workshop on Hot Topics in System Dependability (HotDep), 2011.
- P. Marinescu, **R. Banabic**, and G. Candea. An Extensible Technique for High-Precision Testing of Recovery Code. In Proceedings of the USENIX Annual Technical Conference, 2010. (Acceptance rate: 16%).
- L. Vacariu, F. Roman, M. Timar, T. Stanciu, **R. Banabic**, O. Cret. Software and Hardware Implementation of Mobile Robot Path-planning. In WSEAS Transactions on Systems and Control Journal, Issue 2, Volume 2, February 2007.
- L. Vacariu, F. Roman, M. Timar, T. Stanciu, **R. Banabic**, O. Cret. Mobile Robot Path Planning Software and Hardware Implementations. In 3rd European Conference on Mobile Robots 2007.

Posters

- **R. Banabic**, G. Candea. Using Sensitivity Analysis to Improve Automated Testing. Poster at EuroSys 2009.

Activities & Awards

2011−2012	IBM PhD Fellowship
2009−2010	EPFL PhD Fellowship
2006	First prize at the 24-hour Axway EESTEC Olympics in Bucharest (three-person team)
	Participation at the ACM SouthEastern European programming contest (three-person team)
−2005	3rd prize at the American Computer Science League (five-person team)
	1st prize at the "Grigore Moisil" national programming contest
	Participation at the National Physics Olympiad (3x) and Computer Science Olympiad (1x)

Other

LANGUAGES	*English* (fluent − Cambridge Advanced English E-SOL certificate), *French* (basic), *German* (basic), *Romanian* (mother tongue).
HOBBIES	Tennis, Football, Ski, Photography, Gadgets.

Updated on Jan 24th, 2014