Marko Dimjašević

Contact Information

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Education

School of Computing, University of Utah, Salt Lake City, Utah, USA

PhD Candidate in computer science — *August 2012 – present*

- Dissertation topic: Augmentation and Application of Automatic Software Testing
- Supervisor: Zvonimir Rakamarić, Assistant Professor

Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia

Dipl. ing. in Computing — *October 2004 – October 2010*

- Thesis Topic: Adding MOBIKE Support into the IKEv2 Implementation
- Supervisors: Leonardo Jelenković, Assistant Professor, Stjepan Groš, Assistant Professor

Honors and Awards

The International Alumni Club Scholarship, The University of Utah Alumni Association, 2016

Ministry of Science, Education and Sports' National Scholarship for Talented Students, 2006 – 2009

3rd place in the Croatian National Informatics Student Team Competition, October 2005

2nd place in the Croatian National Programming League 2003/04, November 2004

Acknowledgment for Achieved Results in Advancement of Technical Culture, Technical Culture Association of Koprivnica – Križevci County, June 2004

6th place in the Croatian National Informatics Team election, June 2003

6th place in the IX. Croatian Olympiad in Informatics, May 2003

4th place in the National Competition in Informatics, Croatia, May 2003

First price "summa cum Taude" won with the Tamburica Orchestra of the Albert Štriga Music School at the 47th European Music Festival, Neerpelt, Belgium, 1999

Three gold plaquettes at the Croatian Tamburica Music Festival, won with the Tamburica Orchestra of the Albert Štriga Music School, 1998 – 2001

Peer-Reviewed Publications

K. Luckow, M. Dimjašević, D. Giannakopoulou, F. Howar, M. Isberner, T. Kahsai, Z. Rakamarić, and V. Raman, "JDart: A Dynamic Symbolic Analysis Framework", *The International Conference on Tools and Algorithms for the Construction and Analysis of Systems*, Eindhoven, The Netherlands, 2016.

M. Dimjašević, S. Atzeni, I. Ugrina, and Z. Rakamarić, "Evaluation of Android Malware Detection Based on System Calls", *The International Workshop on Security and Privacy Analytics*, New Orleans, Louisiana, USA, 2016.

M. Dimjašević, D. Giannakopoulou, "Test-Case Generation for Runtime Analysis and Vice Versa: Verification of Aircraft Separation Assurance", *The International Symposium on Software Testing and Analysis*, Baltimore, Maryland, USA, 2015.

M. Dimjašević, D. Giannakopoulou, F. Howar, M. Isberner, Z. Rakamarić, and V. Raman, "The Dart, the Psyco, and the Doop", *Java PathFinder Workshop*, Salt Lake City, Utah, USA, 2014.

M. Dimjašević, Z. Rakamarić, "JPF-Doop: Combining Concolic and Random Testing for Java", Extended abstract, *Java PathFinder Workshop*, Palo Alto, California, USA, 2013.

M. Dimjašević, "Automatic Testing of Software Libraries", Presentation-only paper, Student Forum at the *13th conference on Formal Methods in Computer Aided Design*, Portland, Oregon, USA, 2013.

Technical Reports

M. Dimjašević, S. Atzeni, I. Ugrina, and Z. Rakamarić, "Android Malware Detection Based on System Calls", University of Utah, School of Computing, UUCS-15-003, 2015.

Software and Data

JDoop — Automatic Test Case Generation for Java

Mentor: Zvonimir Rakamarić *January 2013 – present*

JDoop is a tool for automatic test case generation for Java libraries and programs. It is based on a combination of random testing and dynamic symbolic execution.

`https://github.com/psycopaths/jdoop`
`https://github.com/soarlab/jdoop-wrapper`

Clover — Dynamic Symbolic Execution of Un-closed Software

Mentor: Zvonimir Rakamarić *February 2016 – October 2016*

In the Clover project I work on a challenging problem of analyzing un-closed real-world software with KLEE, a symbolic execution tool. KLEE is a symbolic execution tool for C programs. We target programs and libraries from the Debian operating system.

`https://github.com/soarlab/clover`

artifact-eval — Reproducible Research Evaluation

Conferences: CAV 2015, PLDI 2016 *February 2015 – September 2016*

As as a member of artifact evaluation committees for two computer science conferences, I wrote a virtualization environment that facilitates evaluation of research software artifacts.

`https://gitlab.com/mdimjasevic/artifact-eval`

Google Summer of Code 2016 — Support for KLEE in Debile

Mentors: Sylvestre Ledru, Clément Schreiner, Zvonimir Rakamarić *May 2016 – August 2016*

During the summer of 2016 I worked with the Debian Project on supporting KLEE in Debile, a Debian package analysis infrastructure. During the project I made contributions to a number of software projects: Debile, sbuild, WLLVM, and KLEE. With a prototype infrastructure I found a bug in Debian.

`https://wiki.debian.org/SummerOfCode2016/StudentApplications/MarkoDimjasevic`

maline — Malware Detection for Android

Mentor: Zvonimir Rakamarić *October 2013 – December 2015*

maline is a malware detection tool for Android applications based on dynamic analysis and machine learning.

`https://github.com/soarlab/maline`

maline — Malware Detection for Android: Dataset

Mentor: Zvonimir Rakamarić *October 2013 – December 2015*

In order to facilitate reproducible research, we made our extensive dataset of over 300 GB from the malware detection project freely available to the public and other scientists.

`https://zenodo.org/record/154737`

Runtime Verification of AutoResolver

Mentor: Dimitra Giannakopoulou *September 2014 – December 2014*

During my internship at the NASA Ames Research Center, I worked on specifying and verifying a future air traffic control system called AutoResolver. I specified properties, developed a novel way to generate test cases for runtime verification of the complex software system, developed a framework, and implemented the properties. We published this work at ISSTA 2015.

Google Summer of Code 2013 — Combining JDart and Randoop

Mentor: Zvonimir Rakamarić *June 2013 – September 2013*

During the Google Summer of Code 2013 program, I developed an automatic software testing tool called JPF-Doop. The tool builds on Java PathFinder's jDART, a concolic execution engine, and Randoop, a feedback-directed random testing engine.

`https://github.com/psycopaths/jdoop`

Google Summer of Code 2012 — Model Checking Android Services

Mentors: Zvonimir Rakamarić, Eric Mercer *April 2012 – August 2012*

This project had a goal of extending Java PathFinder by adding support for model checking

Android services.
`https://gitlab.com/mdimjasevic/jpf-android-services`

Other Education

"Software Systems Safety", **Summer School Marktoberdorf**, Marktoberdorf, Germany, 2013.

"Third Summer School on Formal Techniques", Atherton, California, USA, 2013.

Talks

"Evaluation of Android Malware Detection Based on System Calls", March 2016, The 2nd International Workshop on Security and Privacy Analytics, New Orleans, Louisiana, USA

"Test-Case Generation for Runtime Analysis and Vice Versa: Verification of Aircraft Separation Assurance", July 2015, The International Symposium on Software Testing and Analysis, Baltimore, Maryland, USA

"Runtime Verification of AutoResolver", January 2015, NASA Ames Research Center, Moffett Field, California, USA

"JPF-Doop: Combining Concolic and Random Testing for Java", November 2013, The Java Pathfinder Workshop 2013, Palo Alto, California, USA

"Automated Testing of Software Libraries", October 2013, The 13th Conference on Formal Methods in Computer Aided Design, Portland, Oregon, USA

"Copy–wrong — Copyleft as a Cultural Reversing Mechanism", March 2011, the Culture Shock Festival, Križevci, Croatia

"The Wealth of Networks — How Social Production Transforms Markets and Freedom", March 2010, the Culture Shock Festival, Križevci, Croatia

"The Impact of Copyright on the Development of Culture", March 2010, the Culture Shock Festival, Križevci, Croatia

"GNU/Linux — How Did the Penguin Fly in Through the Window", March 2009, the Culture Shock Festival, Križevci, Croatia

Professional Activities

International Conference for High Performance Computing, Networking, Storage and Analysis, Salt Lake City, Utah, USA

Volunteer at SC12 — *November 2012*

Free Software Croatia, Križevci, Croatia

Founder and President — *June 2011 – June 2012*

`http://slobodansoftver.hr`

Board of European Students of Technology (BEST) – Zagreb, Zagreb, Croatia

Project Manager and President — *2006 – 2009*

`http://www.best.hr`

Professional Service

International Workshop on Malware Analysis — Program Committee member — *2016*

Conference on Programming Language Design and Implementation — Artifact Evaluation Committee member — *2016*

Conference on Computer Aided Verification — Artifact Evaluation Committee member — *2015*

Executive Committee member, Competition in Informatics, Križevci, Croatia — *March 2006*

High school students' mentor, Competition in Informatics, Križevci, Croatia — *2004 – 2006*

Research Experience

School of Computing, University of Utah, Salt Lake City, Utah, USA

Research Assistant — *Jan 2013 – Aug 2014, Jan 2015 – present*

Robust Software Engineering Group, NASA Ames Research Center, Moffett Field, California, USA

Research Intern — *Sep 2014 – Dec 2014*

Teaching Experience

School of Computing, University of Utah, Salt Lake City, Utah, USA

Teaching Assistant — *August 2012 – December 2012*

Grammar School "Gimnazija Ivana Zakmardija Dijankovečkoga", Križevci, Croatia
Math Teacher and Informatics Teacher *January 2012 – May 2012*

Elementary School "Osnovna škola Ljudevita Modeca", Križevci, Croatia
Math Teacher *January 2011 – June 2011*

Informatics Club "Križevci", Križevci, Croatia
Head of Programming Workshops *2002 – 2007*

Computer Skills

Languages

Scala, Java, AspectJ, C++, C, Python, Bash, Octave, SQL, HTML, LaTeX, R, Haskell

Software Technologies

Git, Apache Spark, Linux Containers, cgroups, QEMU, libvirt, Vagrant, Docker

Operating systems

GNU/Linux, Android

Other

I am skilled in software and data reproducibility, system administration, advanced algorithms in optimization, graph theory, and heuristics.