

Ivo Krka

CONTACT INFORMATION

Department of Computer Science
University of Southern California
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Los Angeles, CA, 90089-0781, USA

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EDUCATION

University of Southern California

PhD, Computer Science August 2007 - expected May 2013

- Topic: Requirements Capture and Elicitation Using Partial Behavior Models
- Advisor: Professor Nenad Medvidovic
- GPA: 4.0/4.0

M.S., Computer Science August 2007 - May 2009

- Advisor: Professor Nenad Medvidovic
- GPA: 4.0/4.0

University of Zagreb

M.Eng. (dipl.ing.), Computing October 2002 - May 2007

- Advisor: Professor Sinisa Sribljic
- GPA: 5.0/5.0

B.S., Economics October 2004 - May 2007

- Not Completed (Leave of Absence)

HONORS AND AWARDS

University of Southern California

- Provost's Fellowship, 2007 - 2011
- Outstanding Research Assistant, Computer Science Department, 2009

Google Inc.

- Google Best Intern Scholarship, 2009 - 2010

ACM SIGSOFT

- ACM SIGSOFT CAPS Travel Award, 2009

Croatian Ministry of Science, Education and Sport

- Award for Croatian Graduate Students Studying Abroad, 2008
- National Scholarship, 2002-2007
- 3rd Place in the National Mathematics Competition, 2000

Nacional Magazine

- Top Scholarship for Top Students Competition Finalist, 2006 - 2007

Faculty of Electrical Engineering and Computing, University of Zagreb

- Best Graduating Student of Computing, 2007
- Dean's Honor List, 2003 - 2006
- 1st Place in the Qualifying Exam, 2002

Faculty of Business and Economics, University of Zagreb

- 2nd Place in the Qualifying Exam, 2004

RESEARCH
INTERESTS

- Requirements Specification and Elaboration
- Behavioral Model Synthesis and Analysis
- Behavioral Specification Mining
- Architecture-Based Reliability Assessment

RESEARCH
EXPERIENCE

Graduate Research Assistant, *University of Southern California*

August 2007 - present

- Developing Techniques for Requirements Elicitation and Refinement using Partial-Behavior Models
- Proposing a Novel Scenario-Based Formalism for Distributed Reactive Systems
- Implementing a Framework for Scalable Refinement of Partial Behavior Models
- Designing an Algorithm for Synthesis of Component-Level Partial-Behavior Models from Early System Specifications
- Developing an Automated Technique for Extracting Partial Behavior Models from Code
- Developing Techniques for Architecture-Based Reliability Assessment of Concurrent Systems
- Designing Domain Specific Software Architecture (DSSA) for Grid Technologies Based on Experiences from Existing Grids
- Reverse Engineering Software Architectures of 5 Grid Technologies
- Investigating Applicability of Software Architecture Principles to Mobile Robotics

Undergraduate Research Assistant, *University of Zagreb*

September 2005 - May 2006

- Developing a Compiler for an End-User Oriented WS Composition Language

ENGINEERING
EXPERIENCE

Software Engineering Intern, *Google Inc.*

June 2009 - August 2009

- Enhancing YouTube Video Classification

Undergraduate Student Intern, *Ericsson Nikola Tesla, Zagreb*

July 2005 - August 2005

- Developing Distributed Applications for a WS Middleware Technology

TEACHING
EXPERIENCE

Graduate Teaching Assistant, *University of Southern California*

August 2007 - present

- 578 Software Architecture, Fall 2010

Undergraduate Teaching Assistant/Grader, *University of Zagreb*

October 2005 - May 2007

- Compiler Design 1, Fall 2005 - 2006
- Compiler Design 2, Spring 2006 - 2007

BOOK CHAPTERS
AND JOURNAL
PUBLICATIONS

- [1] Nenad Medvidovic, Hossein Tajalli, Joshua Garcia, Yuriy Brun, **Ivo Krka**, George Edwards. Engineering Heterogeneous Robotics Systems: A Software Architecture-Based Approach. *Computer*, accepted for publication.
- [2] Sam Malek, George Edwards, Yuriy Brun, Hossein Tajalli, Joshua Garcia, **Ivo Krka**, Nenad Medvidovic, Marija Mikic-Rakic, Gaurav Sukhatme. An Architecture-Driven Software Mobility Framework. *Journal of Systems and Software*, vol. 83, no. 6, June 2010.
- [3] **Ivo Krka**, George Edwards, Leslie Cheung, Leana Golubchik, Nenad Medvidovic. A Comprehensive Exploration of Challenges in Architecture-based Reliability Estimation. *Architecting Dependable Systems VI*, Lecture Notes in Computer Science, 2009.

CONFERENCE
PUBLICATIONS

- [1] **Ivo Krka**, Yuriy Brun, George Edwards, Nenad Medvidovic. Synthesizing Partial Component-Level Behavior Models from System Specifications. *The 7th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE09)*, Amsterdam, Netherlands, August 2009.

SHORT PAPERS
AND WORKSHOP
PUBLICATIONS

- [1] **Ivo Krka**. From Requirements to Partial Behavior Models: an Iterative Approach to Incremental Specification Refinement. In *Proceedings of the 18th ACM SIGSOFT Symposium on the Foundations of Software Engineering (FSE10)*, Doctoral Symposium, Santa Fe, USA, November 2010.
- [2] **Ivo Krka**, Yuriy Brun, Daniel Popescu, Joshua Garcia, Nenad Medvidovic. Using Dynamic Execution Traces and Program Invariants to Enhance Behavioral Model Inference. In *Proceedings of the 32st International Conference on Software Engineering, New Ideas and Emerging Results Track (ICSE10 NIER)*, Companion Volume, Cape Town, South Africa, May 2010.
- [3] **Ivo Krka**, Leana Golubchik, Nenad Medvidovic. Probabilistic Automata for Architecture-Based Reliability Assessment. In *Proceedings of the ICSE 2010 Workshop on Quantitative Stochastic Models in the Verification and Design of Software Systems (QUOVADIS10)*, Cape Town, South Africa, May 2010.
- [4] Chris A. Mattmann, Joshua Garcia, **Ivo Krka**, Daniel Popescu, Nenad Medvidovic. The Anatomy and Physiology of the Grid Revisited. In *Proceedings of the Joint Working IEEE/IFIP Conference on Software Architecture & European Conference on Software Architecture (WICSA/ECSA09)*, Cambridge, UK, September 2009.
- [5] **Ivo Krka**. Synthesizing and Utilizing Partial-Behavior Models During Requirements Elicitation. In *Proceedings of the 7th Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE09)*, Doctoral Symposium, Amsterdam, Netherlands, August 2009.
- [6] **Ivo Krka**, George Edwards, Yuriy Brun, Nenad Medvidovic. From System Specifications to Component Behavioral Models. In *Proceedings of the 31st International Conference on Software Engineering, New Ideas and Emerging Results Track (ICSE09 NIER)*, Companion Volume, Vancouver, Canada, May 2009.

- [7] **Ivo Krka**, Leslie Cheung, George Edwards, Leana Golubchik, and Nenad Medvidovic. Architecture-Based Software Reliability Estimation: Problem Space, Challenges, and Strategies. In *Proceedings of the DSN 2008 Workshop on Architecting Dependable Systems (WADS08)*, Anchorage, USA, June 2008.

THESES AND
NON-REFEREED
PUBLICATIONS

- [1] **Ivo Krka**, Nenad Medvidovic. Supporting Refinement of Partial Behavior Models Under Model Composition and Abstraction. Technical Report USC-CSSE-2010-510, Computer for Systems and Software Engineering, University of Southern California, Los Angeles, CA, USA, May 2010.
- [2] **Ivo Krka**. Personalized Navigation System Based on Service Composition. Diploma Thesis (in Croatian), Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia, May 2007.
- [3] **Ivo Krka**. Geographic Navigation System Simulation. *Exploring ICT Frontiers: Agents, IP Multimedia Subsystem, and Distributed Computing* (eds. Sasa Desic et al.), Technical Report ETK/D-SC2005, Ericsson Nikola Tesla, Zagreb, Croatia, September 2005.

POSTERS AND
FORMAL
PRESENTATIONS

- [1] From Requirements to Partial Behavior Models: An Iterative Approach to Incremental Specification Refinement. Presentation, FSE 2010, Doctoral Symposium, Santa Fe, USA, November 2010.
- [2] Using Dynamic Execution Traces and Program Invariants to Enhance Behavioral Model Inference. Poster and Presentation, ICSE NIER 2010, Cape Town, South Africa, May 2010.
- [3] Probabilistic Automata for Architecture-Based Reliability Assessment. Presentation, QUOVADIS 2010, Cape Town, South Africa, May 2010.
- [4] SHARP: A Scalable Approach to Architecture-Level Reliability Prediction of Concurrent Systems. Presentation, QUOVADIS 2010, Cape Town, South Africa, May 2010.
- [5] Partial Behavior Models as a Driver of Requirements Elicitation. Presentation, USC CS Department Annual Research Review, Los Angeles, CA, USA, April 2010.
- [6] Synthesizing Partial Component-Level Behavior Models. Presentation, USC-CSSE Annual Research Review, Los Angeles, CA, USA, March 2010.
- [7] Synthesizing Partial Component-Level Behavior Models from System Specifications. Presentation, ESEC/FSE 2009, Amsterdam, Netherlands, August 2009.
- [8] Exploring and Evaluating Metadata for Video Classification. Presentation, Intern Project Presentations, Google Inc., Santa Monica, CA, August 2009.
- [9] Synthesizing and Utilizing Partial-Behavior Models During Requirements Elicitation. Presentation, PhD Lightning Talks, Google Inc., Santa Monica, CA, July 2009.
- [10] From System Specifications to Component Behavioral Models. Poster, UCI-ISR Research Forum, Irvine, CA, USA, June 2009.
- [11] From System Specifications to Component Behavioral Models. Poster and Presentation, ICSE New Ideas and Emerging Results, Vancouver, Canada, May 2009.

- [12] Synthesizing Component-Level Partial Behavior Models from Scenarios and Constraints. Presentation, USC-CSSE Annual Research Review, Los Angeles, CA, USA, March 2009.
- [13] Architecture-Based Software Reliability Estimation: Problem Space, Challenges, and Strategies. Presentation, DSN 2008 Workshop on Architecting Dependable Systems, Anchorage, AK, USA, June 2008.
- [14] Architecture-Based Software Reliability Estimation: Problem Space, Challenges, and Strategies. Poster, UCI-ISR Research Forum, Irvine, CA, USA, June 2008.
- [15] An Architectural Approach to Robotics Software Design, Implementation, and Deployment. Presentation with Joshua Garcia USC-CSSE Annual Research Review, Los Angeles, CA, USA, March 2008.
- [16] Personalized Navigation System Based on Service Composition. Diploma Defense, Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia, May 2007.
- [17] Geographic Navigation System Simulation. Presentation, Ericsson Nikola Tesla, Zagreb, Croatia, September 2005.

PROFESSIONAL SERVICE

Student Advisor

- John Morse, MS, 2009

Reviewer

- IEEE Transactions on Software Engineering, 2010

External Reviewer

- Workshop on Software Engineering for Adaptive and Self-Managing Systems (SEAMS), 2010
- Workshop on Quantitative Stochastic Models in the Verification and Design of Software Systems (QUOVADIS), 2010
- International Conference on Automated Software Engineering (ASE), 2009
- Architecting Dependable Systems VI (ADS), 2009
- Workshop on Architecting Dependable Systems (WADS), 2009
- International Conference on Autonomic Computing (ICAC), 2009
- International Conference on Automated Software Engineering (ASE), 2008

Conference Organization

- Submission Administrator, International Conference on Autonomic Computing (ICAC), 2009
- Student Volunteer, International Conference on Software Engineering (ICSE), 2009
- Submission Administrator, International Conference on Self-Adaptive and Self-Organizing Systems (SASO), 2009
- Submission Administrator, ICSE Warm-Up Workshop (ICSE WUP), 2009
- Submission Administrator, Euromicro SEAA, Special Session on Software Architectures for Pervasive Systems (SAPS), 2008
- Student Volunteer, International Conference on Software Engineering (ICSE), 2008

Department Activities

- Chair, PhD Socials Organizing Committee, USC CS Department, 2010-2011
- Member, PhD Socials Organizing Committee, USC CS Department, 2009-2010

PROFESSIONAL
ASSOCIATIONS

Association for Computing Machinery (ACM)

ACM's Special Interest Group on Software Engineering (ACM SIGSOFT)

Institute of Electrical and Electronics Engineers (IEEE)

IEEE Computer Society (IEEE CS)

TECHNICAL SKILLS

Programming Languages: C, C++, C#, Java, Python, and others

Technologies: HTML, MapReduce, SQL, UML, Web Services, XML, and others

Tools: IBM Rational SA, LTSA, Matlab, LaTeX, MS Office, and others

Operating Systems: Linux, Microsoft Windows 2000/XP/Vista, UNIX

OTHER SKILLS
AND ACTIVITIES

Languages: Croatian (native), English (fluent), German (basic)

Journalist: CroBasket.com, Hrvatska Kosarka Magazine

REFERENCES

Upon Request