

Arjun Radhakrishna

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HISTORY

- 2014 – Now **Post-doctoral researcher**, *University of Pennsylvania*,
Advisor: Professor Rajeev Alur (<http://seas.upenn.edu/~alur>).
- 2009 – 2014 **Ph.D. in Computer Science**, *Institute of Science and Technology*, Austria,
THESIS: *Quantitative Specifications for Verification and Synthesis* .
Advisor: Professor Thomas A. Henzinger (<http://pub.ist.ac.at/~tah>)
- 2005 – 2009 **Bachelor of Technology**, *Indian Institute of Technology, Bombay*,
GPA: 9.2 out of 10.0,
UNDERGRADUATE THESIS: *On Equilibria in Stochastic Borel Games*.
Supervisor: Professor Shankara Narayanan Krishna (<http://www.cse.iitb.ac.in/~krishnas>)

SCIENTIFIC INTERESTS

- Program Synthesis
- Verification and Synthesis for Concurrent Programs
- Quantitative Aspects of Verification and Synthesis
- Synthesis for Temporal Logic
- Applications of Graph Games to Formal Verification

INTERNSHIPS

- Aug – Oct Internship at Microsoft Research, Bangalore
2013 Verification of Distributed Systems.
Supervisor: Akash Lal
- May – Jul Internship at Microsoft Research, Redmond
2011 Online Tutoring Systems for Geometry.
Supervisor: Kenneth McMillan
- Apr – Jun Internship at EPFL, Lausanne.
2008 Environment Assumptions for Synthesis.
Supervisor: Thomas A. Henzinger and Barbara Jobstmann
- Apr – Jun Internship at Hyperion, Bangalore
2007 Keyword Search for Multidimensional OLAP Databases.
Supervisor: Laks V. S. Lakshmanan

SOFTWARE

- GIST Games solver from IST**
A tool that can be used to (a) solve for the almost-sure winning regions in probabilistic ω -regular games, and (b) compute the minimal environment assumptions for synthesis of unrealizable LTL specifications.
Tool webpage: <http://pub.ist.ac.at/gist>
- CoLT Concurrency using Lockstep Tool**
A tool for model-checking linearizability of concurrent data structures.
Tool webpage: <http://pub.ist.ac.at/~cernyp/colt>
- SWAPPER Concurrency Swapper Tool**
A tool for fixing concurrency bugs in device drivers using semantics-preserving transformations of code.
- AUTOMATA Automata Tutor**
TUTOR An automated tutoring aid for the instructors and students of undergraduate automata theory courses.
- PENGUINS Syntax-guided Synthesis Tools**
SUITE A collection of tools for syntax-guided synthesis in various domains. Currently, the most efficient tool for the linear integer arithmetic domain.

TEACHING

Teaching assistant for the Formal methods course at IST Austria during the years 2011 and 2012.

Guest lecturer for the Computer Aided Verification course (CIS 673) at University of Pennsylvania.

Attended a workshop series on **Fundamentals of Teaching and Learning** held at the University of Pennsylvania.

AWARDS

My thesis was awarded the **2014 ACM SIGBED Paul Caspi Memorial Dissertation Award** which is presented annually to the author of an outstanding dissertation in the area of Embedded Systems to recognize work that significantly advances the state of the art in the science of embedded systems, in the spirit and legacy of Dr. Paul Caspi's work.

PUBLICATIONS

Synthesis through Unification. Rajeev Alur, Pavol Černý, and Arjun Radhakrishna. In CAV 2015.

From Non-preemptive to Preemptive Scheduling using Synchronization Synthesis. Pavol Černý, Edmund M. Clarke, Thomas A. Henzinger, Arjun Radhakrishna, Leonid Ryzhyk, Roopsha Samanta, and Thorsten Tarrach. In CAV 2015. **Second place at the CAV artifact evaluation.**

Segment Abstraction for Worst-Case Execution Time Analysis. Pavol Černý, Thomas A. Henzinger, Laura Kovács, Arjun Radhakrishna, and Jakob Zwirchmayr. In ESOP, 2015.

- Succinct Representation of Concurrent Trace Sets.** Ashutosh Gupta, Thomas A. Henzinger, Arjun Radhakrishna, Roopsha Samanta, Thorsten Tarrach. In POPL, 2015.
- Interface Simulation Distances.** Pavol Černý, Martin Chmelik, Thomas Henzinger, and Arjun Radhakrishna. In Theoretical Computer Science, 2014.
- Regression-free Synthesis for Concurrency.** Pavol Černý, Thomas A. Henzinger, Arjun Radhakrishna, Leonid Ryzhyk, Thorsten Tarrach. In CAV, 2014.
- Battery Transition Systems.** Udi Boker, Thomas Henzinger, and Arjun Radhakrishna. In POPL, 2014.
- Efficient Synthesis for Concurrency using Semantics-Preserving Transformations.** Pavol Černý, Thomas Henzinger, Arjun Radhakrishna, Leonid Ryzhyk, and Thorsten Tarrach. In CAV, 2013.
- Quantitative Abstraction Refinement.** Pavol Černý, Thomas Henzinger, and Arjun Radhakrishna. In POPL, 2013.
- Simulation Distances.** Pavol Černý, Thomas A. Henzinger, and Arjun Radhakrishna. In Theoretical Computer Science, 2012.
- Synthesis from Incompatible Specifications.** Pavol Černý, Sivakanth Gopi, Thomas Henzinger, Arjun Radhakrishna, and Nishant Totla. In EMSOFT, 2012. **Nominated for the Best Paper award.**
- Interface Simulation Distances.** Pavol Černý, Martin Chmelik, Thomas Henzinger, and Arjun Radhakrishna. In GANDALF, 2012.
- Quantitative Synthesis for Concurrent Programs.** Pavol Černý, Krishnendu Chatterjee, Thomas Henzinger, Arjun Radhakrishna, and Rohit Singh. In CAV, 2011.
- Simulation Distances.** Pavol Černý, Thomas A. Henzinger, and Arjun Radhakrishna. In CONCUR, 2010.
- Quantitative Simulation Games.** Pavol Černý, Thomas A. Henzinger, and Arjun Radhakrishna. In *Essays in Memory of Amir Pnueli*, 2010.
- * **Model Checking of Linearizability of Concurrent Lists.** Pavol Černý, Arjun Radhakrishna, Damien Zufferey, Swarat Chaudhuri, and Rajeev Alur. In CAV, 2010.
- GIST: A Solver for Probabilistic Games.** Krishnendu Chatterjee, Thomas A. Henzinger, Barbara Jobstmann, and Arjun Radhakrishna. In CAV, 2010.