ABHISHEK UDUPA

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EDUCATION

Doctor of Philosophy   *Sept. 2010 – May 2016*

Department of Computer and Information Science, University of Pennsylvania.

Dissertation title: Synthesis of Distributed Protocols from Scenarios and Specifications.

Advised by Rajeev Alur.

Master of Science (Engg.)   *Aug. 2006 – June 2009*

Department of Computer Science and Automation, Indian Institute of Science.

Dissertation title: *Efficient Compilation of Stream Programs onto Multi-cores with Accelerators.*

Awarded the M.N.S. Swamy Medal for the best thesis in the department for the year 2009 – 2010.

Advised by R. Govindarajan and Matthew J. Thazhuthaveetil.

Bachelor of Engineering   *Sept. 2000 – June 2004*

Department of Computer Science and Engineering,

Manipal Institute of Technology, Manipal, India

Dissertation topic: *Data Compression using Prediction by Partial String Matching.*

PROFESSIONAL EXPERIENCE

Research Software Engineer   *February 2016 – Present*

Microsoft Corporation, Redmond, WA.

Research Intern   *June 2013 – September 2013*

Intel Corporation, Santa Clara, CA, with the Strategic CAD Labs.

Research Intern   *June 2012 – September 2012*

Microsoft Research India, with the Rigorous Software Engineering/Programming Languages and Tools
(RSE/PLATO) group.

Research Assistant   *November 2009 – July 2010*

Microsoft Research India, with the Rigorous Software Engineering (RSE) group.

Research Intern   *July 2009 – October 2009*

Microsoft Research India, with the Rigorous Software Engineering (RSE) group.

Assistant Systems Engineer   *July 2004 – June 2006*

Tata Consultancy Services.

PROFESSIONAL SKILLS

- Expertise in software synthesis techniques.
- Familiarity with applied verification techniques with application to software verification.
- **Programming Languages:** C++, C#, C, Java, OCaml, Python.
- **Development Environments:** Windows and Unix-like environments.
- **Github:** https://github.com/abhishekudupa?tab=repositories

PUBLICATIONS

1. *Scaling Enumerative Program Synthesis via Divide and Conquer*
   Rajeev Alur, Arjun Radhakrishna, Abhishek Udupa; In the proceedings of Tools and Algorithms for the Construction and Analysis of Systems - 23rd International Conference, TACAS 2017, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2017, Uppsala, Sweden, April 22-29, 2017

2. *Automatic Completion of Distributed Protocols with Symmetry*
   Rajeev Alur, Mukund Raghothaman, Christos Stergiou, Stavros Tripakis, Abhishek Udupa; In the 27th International Conference on Computer Aided Verification, CAV 2015.

3. *Synthesizing Finite-state Protocols from Scenarios and Requirements*
   Rajeev Alur, Milo Martin, Mukund Raghothaman, Christos Stergiou, Stavros Tripakis, and Abhishek Udupa; In the 10th Haifa Verification Conference, HVC 2014.

4. *Syntax-guided Synthesis*
   Rajeev Alur, Rastislav Bodik, Garvit Juniwal, Milo M. K. Martin, Mukund Raghothaman, Sanjit A. Seshia, Rishabh Singh, Armando Solar-Lezama, Emina Torlak and Abhishek Udupa; In Formal Methods in Computer-Aided Design, FMCAD 2013.

5. TRANSIT: *Specifying Protocols with Concolic Snippets*
   Abhishek Udupa, Arun Raghavan, Jyotirmoy V. Deshmukh, Sela Mador-Haim, Milo M. K. Martin and Rajeev Alur; In the 34th ACM SIGPLAN Conference on Programming Language Design and Implementation, PLDI 2013.

6. *Depth Bounded Explicit-State Model Checking*
   Abhishek Udupa, Ankush Desai, Sriram Rajamani; In SPIN - 2011: The 18th International Workshop on Model Checking of Software, Snowbird, Utah, USA.

7. ALTER: *Exploiting Breakable Dependences for Parallelization*
   Abhishek Udupa, Kaushik Rajan, William Thies; In PLDI - 2011: The 32nd ACM SIGPLAN Conference on Programming Language Design and Implementation, San Jose, CA, USA.

8. *Synergistic Execution of Stream Programs on Multicores with Accelerators*
   Abhishek Udupa, R. Govindarajan, Matthew J. Thazhuthaveetil; In LCTES - 2009: The 2009 ACM SIGPLAN/SIGBED Conference on Languages, Compilers and Tools for Embedded Systems, Dublin, Ireland.

9. *Software Pipelined Execution of Stream Programs on GPUs*
   Abhishek Udupa, R. Govindarajan, Matthew J. Thazhuthaveetil; In CGO-2009: The Seventh International Symposium on Code Generation and Optimization, Seattle, Washington, USA.

AWARDS AND HONORS

- Awarded the M. N. S. Swamy Gold Medal, while a student at the Indian Institute of Science, for the best M.Sc. (Engg) thesis in the department of Computer Science and Automation, for the year 2009 - 2010.

- Sole author of the program synthesis tool named ESOLVER, which won the first place in the 2014 Syntax Guided Synthesis (SyGuS) competition — an annual program synthesis competition; see http://www.sygus.org for more information.

- ESOLVER was placed second in the 2015 SyGuS competition.

- Coauthor of the program synthesizer named EUSOLVER which was the winner of the general track, as well as the programming-by-examples track in the 2016 SyGuS competition.