Sudipta Kundu

Contact Information

EBU3B 2150, Department of CSE, UC San Diego, La Jolla, CA 92093, USA
858-232-3756 skundu@cs.ucsd.edu http://mesl.ucsd.edu/sudipta

Current Status

Ph.D. candidate, Department of Computer Science and Engineering
University of California at San Diego, La Jolla, CA

Citizenship

Indian, Student Visa F1

Research Interests

Program Analysis, Software Engineering, Software Verification,
Concurrent System Analysis, System-Level Hardware Verification.

Education

Ph.D., Computer Science and Engineering, in progress (expected Summer 2009)
University of California at San Diego (UCSD), La Jolla, CA

Thesis: *High-Level Verification of System-Level Designs*

Advisers: Prof. Rajesh Gupta and Prof. Sorin Lerner

GPA: 3.88/4.0

5 Year Integrated Master of Science, Mathematics and Computing, May 2004
Indian Institute of Technology (IIT) at Kharagpur, India

Master Thesis: *Design and Optimization of an application specific Operating System*

Advisers: Prof. Anupam Basu and Prof. U. C. Gupta

Bachelor Thesis: *Assembler and Simulator for a subset of 8086 Assembly Language*

Adviser: Dr. Pawan Kumar

GPA: 9.12/10.0

Rank in the Department: $\mathbf{1^{st}}$

Honors

- *CAL-IT(2) Fellowship award*, 2004-05 from Department of Computer Sc. and Engg., UCSD.
- *Silver Medal*, 2004 from IIT, Kharagpur for being ranked first in the department.
- *Student Fellowship*, 17th International Conference on VLSI Design, Jan 2004, India.
- *J. C. Ghosh memorial prize*, 2003 from IIT Kharagpur for academic excellence.

Research Experience

Summer Internships

- *2008*: *NEC Labs America, Princeton, NJ*; "Efficient Verification of Concurrent Programs using a Bounded Model Checking (BMC) Framework" under the supervision of *Dr. Malay Ganai*.
- *2007*: *NEC Labs America, Princeton, NJ*; "Verification of SystemC Transaction Level Model (TLM)" under the supervision of *Dr. Malay Ganai*.
- *2006*: *INRIA, Rennes, France*; "Compositional Modeling and Synthesis of Systems on a Chip" under the supervision of *Prof. Jean-Pierre Talpin*.
- *2005*: *INTEL Corporation, Portland, OR*; "Dynamic Measurement of Available Bandwidth in a Heterogeneous Home Network", under the supervision of *Narasimham Gadiraju*.

- *2004*: *Communication Empowerment Laboratory, IIT Kharagpur*; "Porting of Embedded Linux and Application to the TI OMAP Platform", under the guidance of *Prof. Anupam Basu*.
- *2002*: *Centre for Internet Research, National University of Singapore* (NUS); "Process Management of Embedded Linux" under the guidance of *Dr. A. L. Ananda*.

Graduate Class Projects

- *Fall 2005*: Implemented test beds on Intel's Mainstone with *Xscale pxa27x* processor for "Performance Comparison using Different Routing Metrics in Ad-hoc Wireless Networks", under the guidance of *Dr. Tajana Simunic Rosing*.
- *Fall 2004*: Worked on "Improving Function and Array Support in SPARK, a parallelizing High-Level Synthesis Framework", under the guidance of Prof. Rajesh Gupta.

External Reviewer

IEEE Transactions on Computer Aided Design.

IEEE Transactions on Design Automation of Electronic Systems.

Publications

Journal Papers

Sudipta Kundu and Sorin Lerner. Translation Validation in High-Level Synthesis. *In Submission*, 2009.

Sudipta Kundu, Sorin Lerner, and Rajesh Gupta. High-Level Verification. ***IPSJ Transactions*** *on System LSI Design Methodology*, 2009. (Invited Paper). *To Appear*.

Conference Papers

Malay Ganai and **Sudipta Kundu**. Reduction of Verification Conditions for Concurrent System using Mutually Atomic Transactions. In ***SPIN '09****: Proceedings of the 16th International SPIN Workshop on Model Checking of Software*, 2009. *To Appear*.

Sudipta Kundu, Zachary Tatlock, and Sorin Lerner. Proving Optimizations Correct using Parameterized Program Equivalence. In ***PLDI '09****: Proceedings of the 2009 ACM SIGPLAN conference on Programming Language Design and Implementation*, 2009. *To Appear*.

Sudipta Kundu, Sorin Lerner, and Rajesh Gupta. Validating High-Level Synthesis. In ***CAV '08****: Proceedings of the 20th international conference on Computer Aided Verification*, pages 459–472, Princeton, NJ, USA, 2008. Springer.

Sudipta Kundu, Malay Ganai, and Rajesh Gupta. Partial Order Reduction for Scalable Testing of SystemC TLM Designs. In ***DAC '08****: Proceedings of the 45th annual conference on Design Automation*, pages 936–941, New York, NY, USA, 2008. ACM.

Sudipta Kundu, Sorin Lerner, and Rajesh Gupta. Automated Refinement Checking of Concurrent Systems. In ***ICCAD '07****: Proceedings of the 2007 IEEE/ACM International Conference on Computer-Aided Design*, pages 318–325, Piscataway, NJ, USA, 2007. IEEE Press.

Gurashis Singh Brar, **Sudipta Kundu**, Pratik Worah, Susmit Biswas, Arijit Mukherjee, and Anupam Basu. OaSis: An Application Specific Operating System for an Embedded Environment. In ***VLSI Design '04****: 17th International Conference on VLSI Design*, pages 776–779, Mumbai, India, 2004. IEEE Press.

In Preparation

Frederic Doucet, **Sudipta Kundu**, Ingolf H. Krüger, R.K. Shyamasundar, and Rajesh Gupta. Compositional Design Methodology for Scalable Verification of System Design, 2009.

Patents

Malay Ganai and **Sudipta Kundu**. Partial Order Reduction for Scalable Testing in System Level Design. *US Patent Pending*, 2008.

Competition Participated

Developed a Chat Messenger and Server for Ideon 2001, the technology fest organized by IIT Kharagpur. National rank: 3^{rd}.

Designed and Implemented a Verilog Logic Circuit Viewer for Ideon 2002, which takes in a structural Verilog program and displays graphically its logic circuit. National rank: 3^{rd}.

References

Rajesh K. Gupta
Professor
Computer Science and Engineering
University of California, San Diego
La Jolla, CA 92093
gupta@cs.ucsd.edu

Sorin Lerner
Assistant Professor
Computer Science and Engineering
University of California, San Diego
La Jolla, CA 92093
lerner@cs.ucsd.edu

Malay K. Ganai
Senior Research Staff Member
System LSI and Software Verification
NEC Laboratories America
Princeton, NJ 08540
malay@nec-labs.com

Ranjit Jhala
Assistant Professor
Computer Science and Engineering
University of California, San Diego
La Jolla, CA 92093
jhala@cs.ucsd.edu

April 21, 2009