

Tapasya Patki

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RESEARCH INTERESTS High Performance Computing, Power and Performance Modeling, Memory Systems

EDUCATION **University of Arizona**, Tucson, AZ
Ph.D., Computer Science, GPA: 4.0, Fall 2010 to present
 • Advisor: David K. Lowenthal

University of Arizona, Tucson, AZ
Master of Science, Computer Science, GPA: 3.67, May 2009

GGG Indraprastha University, New Delhi, India
Bachelor of Technology, Computer Science and Engineering, Jul 2007
 • Cumulative Credit Aggregate: 88.10%
 • University Topper and Gold Medalist, 1st/950

TECHNICAL SKILLS • Languages: C/C++, Basic Java, VB.Net, VHDL, Shell Scripting
 • Operating Systems: Linux/Unix, Windows
 • Utilities: GDB, Valgrind, OProfile, PAPI
 • Software: MATLAB, AutoCAD

RESEARCH EXPERIENCE **Department of Computer Science, University of Arizona** **Jan 2011 to present**
Dynamic Voltage and Frequency Scaling for Processors and Memory
Working on developing power/performance management policies for processors and memory architectures for the HPC community. (Advisor: David K. Lowenthal)

Efficient Implementation of General Linear Models on GPUs **Aug 2010 to present**
Understanding the relationship between plant genotypes and the resultant phenotypes in complex environments is an important problem in plant biology. One approach to this problem is General Linear Modeling (GLM). The iPlant Collaborative (<http://www.iplantcollaborative.org/>) envisions building a sustainable, high-performance cyberinfrastructure to address such problems. I am working on developing an efficient, optimized implementation of GLM on graphics processing units. (Advisors: David K. Lowenthal, Ali Akoglu)

Remote Entrusting System using Continuous Replacement **Jan to May 2009**
Worked on the C implementation of a Client/Server based remote entrusting system using continuous replacement. Obfuscations were applied at the server end to generate a sequence of modules dynamically; and these were used to replace existing modules continually on the client site. (Advisor: Christian Collberg)

Performance Analysis of Software Protection Algorithms **Aug to Dec 2008**
Implemented code-base for popular software obfuscation and tamper-proofing algorithms (Horne, Aucsmith, Cappaert) and carried out various performance measurements using OProfile. (Advisor: Christian Collberg)

Department of Electrical and Computer Engineering, University of Arizona

Command and Control Wind Tunnel: High-Level Multi-Rotorcraft Autonomy **Summer 2008**
Worked in collaboration with Vanderbilt University and University of California-Berkley on simulation of multiple autonomous rotorcrafts. Explored human-UAV interactions and collision-avoidance algorithms. AFOSR Contract Number: FA9550-06-1-0267 (Advisor: Jonathan Sprinkle)

Ministry of Information Technology, Government of India, New Delhi, India

Soft Computing Techniques for Software Security **Summer 2004 and Summer 2005**
Worked on the application of Fuzzy Logic to Software Obfuscation and Cyber Forensics. Also developed library for using Rough Sets for software protection. (Advisors: Shrikant Nawathe and Siva Subramanian)

PROFESSIONAL
EXPERIENCE

Department of Computer Science, University of Arizona

Chief Programmer, Laboratory for Computer Science, LoCuS **Jan to Aug 2011**
Worked on the development of LoCuS (Laboratory fOr CompUter Science) System, which is instructional software for teaching computer science theories through experiments. The goal for LoCuS is to define a new place to emphasize the science of computation as well as a new path for computer science, in the form of labs (PIs: Peter Denning and Richard Snodgrass, <http://www.cs.arizona.edu/projects/focal/ergalics/fieldguide/>).

Sunquest Information Systems, Tucson, AZ

Associate Software Engineer **June 2009 to May 2010**
Worked for Sunquest Outreach Advantage, a software suite that provides business intelligence and geographical connectivity that hospital laboratories require to manage outreach. I was also responsible for the Sunquest OA CRM and Sunquest OA Mobile applications.

Arizona Cancer Center, University of Arizona

Graduate Research Assistant **Aug to Dec 2008**
Analyzed performance issues of ATP-Protein Docking algorithms, specifically with the ArgusLab, BallView and AutoDock software suites. (PIs: Kobus Barnard and Daruka Mahadevan)

TEACHING
EXPERIENCE

- Teaching Assistant for C SC 445, Introduction to Algorithms (Spring 2009)
- Teaching Assistant for C SC 345, Analysis of Discrete Structures (Spring 2008, Fall 2010)

My responsibilities included holding office hours, grading, and teaching an hour-long section every week.

PUBLICATIONS

Gulotta J., Chu D., Yu X., Al-Helal H., Patki T., Hansen J., Hudson M., Sprinkle J., *Using Integrative Models in an Advanced Heterogeneous System Simulation*, Proceedings of the 16th Annual International Conference and Workshop on the Engineering of Computer Based Systems, pp. 3-10, April 14-16, 2009.

Patki T., Al-Helal H., Gulotta J., Hansen J., Sprinkle J., *Using Integrative Modeling for Advanced Heterogeneous System Simulation*, The 8th OOPSLA Workshop on Domain-Specific Modeling, pp. 80-85, October 19-20 2008.

Patki T., Patki A.B., *Innovative Technological Paradigms for Corporate Offshoring*, Journal of Electronic Commerce in Organizations, Vol. 5, No. 2, pp. 57-76, April June 2007, Idea Group Publishing

Patki T., Khurana S., Patki R., Patki A.B., Prithviraj V., *Software Obfuscation for Information Assets Management: an E-Governance Perspective*, Technology in Government (ed. J. Bhattacharya), International E-Governance Conference, Indian Institute of Technology, Delhi, India, Dec. 2006

PAPERS IN
PREPARATION

Gregory M. Striemer, Tapasya Patki, Peter Bailey, Ali Akoglu, David Lowenthal, John Hartman, Peter Bradbury, Matthew Vaughn, Liya Wang, and Stephen Goff. "GPU Accelerated Quantitative Trait Locus Analysis Using A General Linear Model."

HONORS AND
AWARDS

- Recipient of **Graduate Research/Teaching assistantships**, Aug 2007-May 2009, and Fall 2010 to present.
- Recipient of **Computer Science Student Paper Award** from Department of Computer Science, Univ. of Arizona, 2008.
- Awarded the **Third Prize in University-wide CSE Project Competition**, for the design and implementation of fSEE: Fuzzy Software Engineering Environment, 2007.
- Awarded the **First Prize in All India Technical Paper Writing Competition** on Knowledge Management, RIT Raipur, 2005.
- Recipient of a **Merit Scholarship** for one year in Year XI, 2001-2002 session.
- Awarded the First Prize in thematic essay competition, published in **A Compendium of Essays on Fighting Hunger: My perspective**, India Chapter, FAO, UN, 2001.
- Recipient of a **Gold Medal for outstanding performance in French** in the CBSE Xth Board Exam, 2001.

REFERENCES

Available on request.