

Education

- **Georgia Institute of Technology, Atlanta GA** January 2005 - August 2011 (expected)
PhD in Computer Science (switch from ECE) GPA: 3.91/4.0
- **Georgia Institute of Technology, Atlanta GA** August 2004 - December 2005
MS in Electrical and Computer Engineering GPA: 3.9/4.0
- **Ecole Centrale de Lyon, Lyon France** September 2002 - December 2005
Diplôme d'ingénieur With highest honors

Research Experience

- **Getting around Amdahl's law: novel programming models for multi-cores** Current
Prof. Santosh Pande
 - N-way programming model: Speeding up sequential computations through diversity
 - Explore thread interaction and collaboration models
- **Software Transactional Memories** Current
Prof. Santosh Pande
 - Improve the performance of STMs by leveraging programmer supplied information
- **Streaming polymorphous architecture compiler** January 2005 - May 2006
Profs. Krishna Palem and Sudhakar Yalamanchili
 - Helped build a back-end for the Trimaran compiler to target the streaming and dataflow configurations of Monarch, a reconfigurable streaming processor
 - Developed an Eclipse GUI to allow debugging and cycle-by-cycle visualization of the execution of data-flow programs

Work Experience

- **Intel Corporation, Champaign, IL** June-August 2010
Summer Intern under Robert Knight and Lee Baugh Parallel Tools Group
 - Evaluated how to differentiate application characteristics using PMC on Atom
 - Initial work on power tools for Atom
- **Intel Corporation, Champaign, IL** May-August 2008
Summer Intern under Arch Robison Threading Building Blocks Project
 - Studied performance aspects of parallel prefix implementations in TBB and OMP
 - Implemented the Galois model of computation in TBB
- **AtoFina Elf CTL, Pierre Bénite France** June - August 2004
Summer Intern Distributed Systems - Front Office Team
 - Led a study on the feasibility of moving workstations from Windows to Linux
 - Successfully setup a Linux workstation based on the study

Publications/Presentations

- **Leveraging Data-Structure Semantics for Parallelism** May 2011
Romain Cledat, Kaushik Ravichandran, Santosh Pande CF Paper
- **Enriching 3-D Video Games on Multicores** May 2011
Romain Cledat, Tushar Kumar, Jaswanth Sreeram, Santosh Pande IPDPS Paper
- **Dynamic Tuning of Feature Set in Highly Variant Interactive Applications** October 2010
Tushar Kumar, Romain Cledat, Santosh Pande EMSOFT Paper
- **Energy Efficiency via the N-way Model** June 2010
Romain Cledat, Santosh Pande PESPMA Paper
- **Collaborative Threads** June 2010
Kaushik Ravichandran, Romain Cledat, Santosh Pande HotPar Paper
- **Opportunistic Computing: A New Paradigm for Scalable Realism on Many-cores** September 2009
Romain Cledat, Tushar Kumar PACT SRC Presentation
- **Opportunistic Computing: A New Paradigm for Scalable Realism on Many-Cores** March 2009
Romain Cledat, Tushar Kumar, Jaswanth Sreeram, Santosh Pande HotPar Paper
- **Statistically Analyzing Execution Variance for SRT Appli.** August 2008
Tushar Kumar, Romain Cledat, Jaswanth Sreeram, Santosh Pande LCPC Paper
- **RSTM: A Relaxed Consistency Software Transactional Memory System** September 2007
Jaswanth Sreeram, Romain Cledat, Tushar Kumar, Santosh Pande PACT Poster
- **A Profile-Driven Statistical Analysis Framework for the Design Opti. of SRT Appli.** September 2007
Tushar Kumar, Jaswanth Sreeram, Romain Cledat, Santosh Pande FSE Short Paper

- **ACSPD: Accelerated Compilation for SoC Platform Design**
Yogesh L. Chobe, Romain E. Cledat, Krishna V. Palem, Sung-Kyu Lim

July 2006
43rd DAC SIGDA UBooth

Selected Projects

- **OpenMP and MPI barrier implementation** Spring 2007
CS6210: Advanced Operating Systems
 - Implemented two different types of barriers (central and tournament) in OpenMP
 - Implemented a MCS tree barrier in MPI
- **User-level thread library implementation** Spring 2007
CS6210: Advanced Operating Systems
 - Developed a pthread-like library supporting locks, conditions and cancelling and joining of threads
- **Earth heating simulation** Spring 2007
CS6310: Software Architecture and Design
 - Implemented different methods for calculating the heating of the Earth due to the sun
 - Application of software design principles
- **Graphics Programming** Fall 2006
CS6491: Computer Graphics
 - Implemented the loop-subdivision algorithm using the corners representation.
 - Built a complete dynamic and animated scene in OpenGL
 - *GPU Programming* Implemented algorithms (Mandelbrot set, detecting edges and certain visual effects) in Cg
- **MPI based distributed simulation system** Fall 2006
CS6236: Parallel and Distributed Simulation Systems
 - Ported the existing calculation of the LBTS (lower-bound timestamp) to use MPI and implemented an optimized version
- **Multi-threaded webserver and proxy** Spring 2005
CS4210: Advanced Operating Systems
 - Implemented a multi-threaded webserver
 - Implemented a proxy server that could use shared memory to communicate with the webserver if both were collocated on the same machine
 - Implemented a compression service for the proxy over RPC. The proxy would compress all images retrieved before sending them over to the client
- **Advanced compiler design and implementation** Spring 2005
CS6241: Compiler Design and Implementation
 - Implemented SSA conversion in the Trimaran compiler; implemented GVN and SCCP dataflow analysis
 - Implemented GCD and Banerjee loop-iteration-based dependence testing in Trimaran
 - Implemented a framework to detect and hoist very-busy expressions
- **Cache-coherence protocol evaluation** Spring 2005
ECE6101: Parallel and Distributed Architecture
 - Implemented a SMP simulation system to evaluate Write-through, MESI and Dragon cache-coherence protocols

Teaching Experience

- **CS6241: Compiler Design (Prof. Santosh Pande)** Spring 2007
 - Introduced the Trimaran compiler system and aided students with projects
- **ECE6100: Advanced Computer Architecture (Prof. Krishna Palem)** Spring 2006

Service

- **Graduate Student Council President:** Lead the executive committee of the Georgia Tech College of Computing Graduate Student Council (August 2009-Present)
- **Graduate Student Representative:** Represented the graduate students of the School of Computer Science at Georgia Tech (April 2008-August 2009)

Skills

- **Programming Languages:** C, C++, Cg, Java, Caml, Python, SQL, PHP, HTML, Bash
- **Optimizing Compilers and Development Environments:** Eclipse, Trimaran, LLVM
- **Platforms:** MacOS X, Linux, UNIX, Windows

- **Languages:** French, English, Spanish (working knowledge)

Graduate Courses

- **Systems:** Compiler Design, Advanced OS, Advanced Computer Architecture, Parallel and Distributed Architecture
- **Theory:** Deterministic Optimizations, Computability and Algorithms
- **Other:** Computer Graphics, Parallel and Distributed Simulation, Software Architecture and Design

References

- **Professor Santosh Pande** Associate Professor at Georgia Tech
santosh@cc.gatech.edu
- **Robert Knight** Software Engineer at Intel
robert.knight@intel.com
- **Doctor Lee Baugh** Software Engineer at Intel
lee.w.baugh@intel.com
- **Doctor Arch Robison** Sr. Principal Software Engineer at Intel
arch.robison@intel.com
- **Professor Sudhakar Yalamanchili** Professor at Georgia Tech
sudha@ece.gatech.edu