

Renée Marie St. Amant

2542 Sol Wilson Ave, Austin, TX 78702 • 512.658.2049 • stamant@cs.utexas.edu

○ Research Interests

Computer architecture, low-power microarchitectures, new computing technologies.

○ Education

The University of Texas at Austin

Ph.D. in Computer Sciences, GPA: 3.9, third-year student

B.S. in Computer Engineering, GPA: 4.0, May 2006

○ Publications

Conference Papers

R. St. Amant, D. Jiménez, and D. Burger. "Low-power, high-performance, analog neural branch prediction," *41st International Symposium on Microarchitecture (MICRO)*, November, 2008.

Journal Articles

R. St. Amant, D. Jiménez, and D. Burger. "Mixed-signal approximate computation: A neural predictor case study," *IEEE Micro*, Special Issue: Top picks from the computer architecture conferences, 29(1), January/February, 2009.

○ Honors

National Science Foundation Graduate Research Fellowship

2006

○ Research Experience

Research Assistant, UT Austin

2007 to present

Advisor: Doug Burger

- Designed an analog neural branch predictor in the Cadence Analog Design Environment using Predictive Technology Models (PTMs) at 45nm
- Collaborated with Daniel Jimenez on an improved neural prediction algorithm made feasible by an analog implementation
- Showed that the analog design achieves accuracy comparable to the best predictors in the literature and is able to perform the expensive dot-product computation required by neural predictors with low power and low latency compared to digital predictors
- Demonstrated the potential for analog design solutions as transistor sizes shrink and a digital abstraction becomes more difficult to maintain

○ Work Experience

IBM, Austin

Summer 2006

Intern - Processor architecture

- Collaborated with other members of the Power.org Power Architecture Advisory Council (PAAC) from IBM and Freescale to review changes for version 2.03 of the PowerPC architecture
- Drafted future PowerPC architecture changes incorporating input from hardware designers and AIX and Linux developers
- Analyzed unpublished material from Power Architecture Book IV to determine eligibility for inclusion in a published appendix to Book III
- Participated in PowerPC Processor Architecture Control Board (PPACB) meetings to decide the future direction of the PowerPC architecture and resolve issues with the current architecture

IBM, STI (Sony/Toshiba/IBM) Design Center, Austin

Summer 2005

Intern - Cell processor convergence verification

- Ran lab exerciser software applications on Cell processor models using an emulation system
- Developed Perl scripts to construct the emulation environment and automate the above process
- Implemented a new chip initialization sequence to improve efficiency
- Redesigned and enhanced functionality of existing C++ DPX dynamically linked modules (DLMs) for the verification environment
- Created a C++ acceleration environment

IBM, STI (Sony/Toshiba/IBM) Design Center, Austin

Summer 2004

Intern - Cell processor verification

- Developed defs using a random test generator to target specific corner cases at the instruction unit (IU) and core level
- Created and modified existing Perl scripts to automate processes including data filtering, analysis, and transformation
- Managed a random test database

○ Patents

Applications

Mirroring of conversation stubs. With M. Abernethy, G. Cohen, and T. Grigsby. Applications US20080104612 and CN200710166636.

○ Service

Masters Admissions Committee, UT Austin Dept. of Computer Sciences

2008