

Patrick Meredith

Department of Computer Science
201 N. Goodwin
University of Illinois
Urbana, IL 61801

Phone: (217) 418-0418
pmeredit@cs.uiuc.edu

Research

I am a research assistant in the Formal Systems Laboratory (fsl.cs.uiuc.edu). I was formally with the LLVM group (llvm.org).

Current Research

I am interested primarily in the fields of programming languages and compilers, with a secondary focus on computer architecture. My main research goals are the automatic generation of compiler front ends from formal definitions of programming languages, and building a fast parallel rewrite engine. I also work on run-time verification of both software and hardware, and I am rewriting my K definition of Scheme (K-Scheme) from the ground up. My work on runtime verification of COTS components can be found at fsl.cs.uiuc.edu/BusMOP. The current version of K-Scheme, including an online interface, can be found at fsl.cs.uiuc.edu/K-Scheme.

Past Research

While an undergrad in the LLVM group I worked on providing meta-programming support in LLVM. As a graduate student, my research was based on investigating DSA (Data Structure Analysis) and providing hardware support for pointer compression.

Publications

Hardware Runtime Monitoring for Dependable COTS-based Real-Time Embedded Systems

Rodolfo Pellizzoni, Patrick Meredith, Marco Caccamo, Grigore Roşu
29th IEEE Real-Time Systems Symposium (RTSS'08), to appear 2008
December 2008

Efficient Monitoring of Parameteric Context-Free Patterns

Patrick Meredith, Dongyun Jin, Feng Chen, Grigore Roşu
23rd IEEE/ACM International Conference on Automated Software Engineering (ASE'08), to appear 2008
September 2008

Efficient Monitoring of Parameteric Context-Free Patterns

Patrick Meredith, Dongyun Jin, Feng Chen, Grigore Roşu
Technical report UIUCDCS-R-2008-2954
April 2008

A K Definition of Scheme

Patrick Meredith, Mark Hills, Grigore Roşu
Technical report UIUCDCS-R-2007-2907
October 2007

An Executable Rewriting Logic Semantics of K-Scheme

Patrick Meredith, Mark Hills, Grigore Roşu
8th Workshop on Scheme and Functional Programming, DIUL-RT-0701, pp. 91-103,
September 2007

How Successful is Data Structure Analysis in Isolating and Analyzing Linked Data Structures?

Patrick Meredith, Balpreet Pankaj, Swarup Sahoo, Chris Lattner, and Vikram Adve
Technical Report UIUCDCS-R-2005-2658, December 2005

Teaching Experience

CS422: Programming Language Design [Fall 2007], guest lecturer. Gave a lecture on K-Scheme.

CS105: Computer Science for Non-technical Majors [Spring 2007], teaching assistant, webmaster, database master. Tasks included teaching weekly laboratory sections, administering the website and the database used in class.

CS105: Computer Science for Non-technical Majors [Fall 2006], teaching assistant. Tasks included teaching weekly laboratory sections.

Honors and Awards

Siebel Fellowship, 2008

Siebel Scholar, 2005

Tau Beta Pi, 2004

Alpha Lambda Delta, 2002

Phi Eta Sigma, 2002

Phi Kappa Phi, 2002

Deans List, 2002-2003¹

Eagle Scout, 1999

Education

Department of Computer Science, University of Illinois

Pursuing a doctor of Philosophy in Computer Science since August 2006.

M.S. Computer Science, University of Illinois, 2007, GPA: 3.98

B.S. Computer Science, University of Illinois, 2007, *Highest Honors*, GPA: 3.88

¹In 2004-2005 half my hours were for graduate credit; I did not have enough *undergraduate* hours to make the Deans List despite a 4.0 GPA both semesters.

Relevant Coursework

CS533: Parallel Computer Architecture
CS598mc: Real Time Systems
CS523: Advanced Operating Systems
ECE598bl: System on a Chip Design
CS422: Programming Language Design
ECE512: Computer Micro-architecture
CS526: Advanced Topics in Compiler Construction
ECE511: Computer Architecture
CS598cz: Virtual Machines and Run-time Optimization
CS418: Computer Graphics
LING406: Computation Linguistics
CS475: Formal Models of Computation
CS433: Computer System Organization
CS326(426): Compiler Construction
CS323(423): Operating System Design
CS321(421): Programming Languages and Compilers
CS257: Numerical Methods
CS232: Computer Architecture II
CS273: Introduction to Theoretical Computer Science
CS231: Computer Architecture I
CS225: Data Structures and Software Principles
CS172: Discrete Math Structures
CS125: Introduction to CS

Reviews

I have been a reviewer for several conferences and journals including: AMAST'08, IEEE Transactions on Very Large Scale Integration Systems, RTAS'08