

Mark U. Wyse

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Education

University of Washington Seattle, WA June 2021 (Expected)

Paul G. Allen School of Computer Science & Engineering

PhD Computer Science & Engineering 3.70 GPA

University of Washington Seattle, WA Dec. 2015

M.S. Computer Science & Engineering 3.82 GPA

University of Washington Seattle, WA June 2014

B.S. Computer Engineering 3.89 GPA

Publications

Conference Papers:

Thierry Moreau, **Mark Wyse**, Jacob Nelson, Adrian Sampson, Hadi Esmaeilzadeh, Luis Ceze, Mark Oskin. *SNNAP: Approximate Computing on Programmable SoCs via Neural Network Acceleration*. HPCA 2015, February 2015.

Research Reports:

Thierry Moreau, Joshua San Miguel, **Mark Wyse**, James Bornholt, Luis Ceze, Natalie Enright Jerger, Adrian Sampson. *A Taxonomy of Approximate Computing Techniques*. UW CSE Technical Report UW-CSE-16-03-01. March 2016.

Mark Wyse. *Modeling Approximate Computing Techniques*. UW CSE MS Research Report. December 2015.

Workshop Papers:

Mark Wyse, Andre Baixo, Thierry Moreau, Bill Zorn, James Bornholt, Adrian Sampson, Luis Ceze, Mark Oskin. *REACT: A Framework for Rapid Exploration of Approximate Computing Techniques*. WAX 2015 (co-located with PLDI 2015), June 2015.

Experience

Advanced Micro Devices (AMD) Research Bellevue, WA Jan. 2017 – Dec. 2017 (present)

Post-Grad Scholar, Hardware Programmability

- Researching future GPU architectures and microarchitectures targeting General Purpose GPU (GPGPU) compute tasks

Advanced Micro Devices (AMD) Research Bellevue, WA Feb. 2016 – Aug. 2016

Co-op Engineer, Hardware Programmability

- Research internship focusing on hardware programmability and microarchitecture of GPU architectures targeting General Purpose GPU (GPGPU) compute tasks
- Microarchitecture focus on register allocation and management strategies and optimizations

Microsoft Research Redmond, WA June 2015 – Sept. 2015

Research Intern

- Researched hardware acceleration of bioinformatics algorithms on FPGAs and data analysis for nanopore sequencers

University of Washington, Paul G. Allen School of Computer Science & Engineering Seattle WA
Research Assistant, SAMPA (Computer Architecture) group Jan. 2014 – present

- Human Sensory Bandwidth and the ability of humans to understand information conveyed through haptic (vibrating) devices on the surface of the forearm
- Nanopore DNA sequencing data analysis techniques and preliminary investigation of hardware acceleration options
- Approximate computing and the implications of exposing error on computer architectures
- High level synthesis of hardware accelerators from C/C++ source, and the combination of approximation and acceleration

Teaching Assistant

CSEP 548 – Computer Architecture Autumn 2015

- Graduate class on computer architecture
- Topics include hardware/software interface, out-of-order execution, memory hierarchies, multiprocessing, GPU architecture, and warehouse-scale computing

CSE 471 – Computer Design & Organization Spring 2015

- Advanced undergraduate class on computer architecture
- Topics include branch prediction, out-of-order execution, memory hierarchies, and multiprocessing

CSE 467 – Advanced Digital Design Winter 2015

- Advanced undergraduate class on digital design
- Topics include logic synthesis and optimization, HDLs, and logic implementation for reconfigurable fabrics
- Class project was implementing a programmable GPU on a Programmable System-on-a-Chip (PSoC)

CSE 352 – Hardware Design & Implementation Autumn 2013

- Undergraduate class focused on digital logic design and implementation of algorithms for synthesis to FPGAs through Verilog RTL

CSE 351 – Hardware/Software Interface Winter 2013, Winter 2014

- Undergraduate class focused on basic computer systems architecture with an introduction to memory systems, assembly programming, and exceptional control flow

Amazon Seattle, WA June 2013 – Sept. 2013
SDE Intern, Amazon Web Services – Glacier

- Designed and implemented software to reduce customer archive upload failures
- Developed test plan for software project consisting of unit, integration, and network tests

Lockheed Martin Aeronautics Palmdale, CA June 2012 – Sept. 2012
College Tech Intern, Palmdale Site Flight Test

- Developed software integrating legacy C code with .NET using a mixed-mode C++/CLI wrapper library
- Supported real time flight test missions on multiple flight test programs

Lockheed Martin Aeronautics Fort Worth, TX June 2011 – Sept. 2011
College Tech Intern, F-35/JSF Flight Test Data Processing

- Developed data parsing programs for instrumentation configuration and testing in C#
- Revised and created processing procedure documentation for delivery to customers

Microsoft Redmond, WA June 2009 – Sept. 2009
High School Intern, Visual F# Language Team

- Developed sample code for inclusion in example packs distributed on MSDN
- Designed and implemented a Sudoku solver and UI to demonstrate interoperability of F# with other .NET entities

Microsoft Redmond, WA June 2008 – Sept. 2008
High School Intern, GFS Change & Release Management

- Developed reports for software change management to ensure high quality software release from Global Foundation Service (GFS) product teams

Technical Skills

Programming Languages: Experience with C/C++, Python, Verilog. Familiarity with Java, C#, Tcl, .NET

Other: Gem5, Mercurial, Git, Intel PIN, Vivado Design Suite, Vivado HLS, Visual Studio, Eclipse, Linux, Windows, Active-HDL, ModelSim, Quartus II

Professional Affiliations & Service

UW CSE Undergrad Tutor	2016 – present
Institute of Electrical and Electronics Engineers (IEEE)	2013 – present
Association for Computing Machinery (ACM)	2012 – present
UW College of Engineering / CSE Department Volunteer	2012 – present
American Institute of Aeronautics and Astronautics (AIAA)	2009 – 2014
Lockheed Martin Leadership Association Super Science Saturday Volunteer	April 16, 2011

Awards & Honors

University of Washington, College of Engineering Dean's List	2012 – 2014
Cal Poly, President's Honors List	2011
Cal Poly, College of Engineering Dean's List	2010 – 2011
PACCAR Paul Pigott Scholarship Foundation Academic Scholarship	2009

References

Mark Oskin

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Associate Professor
University of Washington, Department of Computer Science & Engineering

Luis Ceze

luisceze@cs.washington.edu
Associate Professor
University of Washington, Department of Computer Science & Engineering

Brad Beckmann

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Advanced Micro Devices (AMD) Research

Douglas Carmean

dcarmean@microsoft.com
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Microsoft Research

Clinton Peterson

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Manager, F-35 Flight Test Data Processing

Lockheed Martin Aeronautics