Emily Furst

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EDUCATION

University of Washington
Ph.D. Computer Science and Engineering **August 2021**
Advisor: Mark Oskin
Thesis: Code Generation and Optimization of Graph Programs on a Manycore Architecture

University of Washington
M.S. Computer Science and Engineering **June 2017**

College of Saint Benedict
B.A. Mathematics and Computer Science **May 2015**
magna cum laude
Honors Thesis: Parallel Preconditioners for Finite Element Computations

AWARDS AND HONORS

Phi Beta Kappa, member
Marilyn Fries Endowed Regental Fellow, *University of Washington*
Graduated with distinction in Mathematics and Computer Science,
College of Saint Benedict
MapCores – Mathematics, Physics, Computer Science Research Scholar,
College of Saint Benedict

CONFERENCE & WORKSHOP PUBLICATIONS

Taming the Zoo: The Unified GraphIt Compiler Framework for Novel Architectures.
Ajay Brahmakshatriya, **Emily Furst**, Victor Ying, Claire Hsu, Changwan Hong, Max Ruttenberg, Yunming Zhang, Dai Cheol Jung, Dustin Richmond, Michael Taylor, Julian Shun, Mark Oskin, Daniel Sanchez, Saman Amarasinghe.
(To Appear) Intl. Symposium on Computer Architecture (ISCA) (2021).

Profiling a GPU Database Implementation
Emily Furst, Mark Oskin, and Bill Howe
13th Intl. Workshop on Data Management on New Hardware (DaMoN), 2017 (Collocated with Sigmod)

Parallelizing Instance-Based Data Classifiers
Imad Rahal, **Emily Furst**, and Ramzi Haraty.
29th Intl. Florida Artificial Intelligence Research Society Conference (FLAIRS), 2016

RESEARCH EXPERIENCE

University of Washington – Mark Oskin, Seattle, WA
Graduate Research Assistant **September 2015 – Present**
Worked as part of the Computer Architecture lab. Worked on understanding and improving the performance of complex architectures. Worked on backend code generation targeting parallel architectures.

Adobe Research – Creative Intelligence Lab – Marcos Slomp, Seattle, WA
Research Intern **June 2018 – September 2018**
Developed a visual debugger for the Halide DSL. Worked on all aspects of the debugger from UI design to integration with the Halide IR. Released an initial version of the tool at https://github.com/halide/visual_debugger

Oracle Labs – Sungpack Hong, Belmont, CA
Research Intern **June 2017 – September 2017**
Worked on GPU code generation from SQL queries. Utilized Spoofax language toolbench to create grammars and use string interpolation for code generation. Compared performance of generated code to existing GPU databases.

Sandia National Laboratories – Jonathan Hu, Albuquerque, NM
Technical Summer Intern **May 2015 – August 2015**
Conducted research on multigrid solvers and developed adapter code within the Trilinos Project utilizing Nvidia's AmgX software. Learned valuable team software development skills and gained experience working in a national laboratory setting.

Department of Computer Science – Michael Heroux, College of Saint Benedict, St. Joseph, MN
Computer Science Research Student **January 2013 – May 2015**
Conducted research in the area of parallel computing. Worked with various benchmarks and computational software packages. Research expanded into senior thesis. Gained experience with different computer architectures and parallelization techniques.

TEACHING EXPERIENCE

Department of Computer Science and Engineering, University of Washington, Seattle, WA
Graduate Teaching Assistant
CSEP 524 - Professional Masters Parallel Programming **Fall 2016**
CSE 160 - Data Programming **Winter 2017**
CSE 351 - The Hardware/Software Interface **Winter 2018**

Department of Computer Science, College of Saint Benedict, St. Joseph, MN
Computer Science Teaching Assistant and Tutor **Fall 2012**
CS 150 - Intro to Computer Science

WORK EXPERIENCE

Adventium Labs, Minneapolis, MN
Student Intern **Summer 2012**
Helped with development of iNeuron, an educational tool for the teaching of neuroscience and mental health concepts.

SERVICE

Member, University of Washington CSE Prospective Student Committee **2016, '17, '18, '19**
Social Chair, University of Washington CSE Event Committee **2016-2017**
Member, University of Washington Women's Research Day Committee **2017, '18, '19**
Chair, University of Washington Women's Research Day Committee **2020**