Krzysztof Drewniak

https:/kdrewniak.com | krzysdrewniak@gmail.com | +1 214-315-4811
5505 15th Ave NE Apt 206, Seattle, WA 98105-3456; US and EU citizenship

EDUCATION

UNIVERSITY OF WASHINGTON

PhD in Computer Science
Sep 2018-Present | Seattle, WA
Master's Degree: December 2020
Program synthesis for hardware accelerators.

THE UNIVERSITY OF TEXAS AT AUSTIN

BS in Computer Science | Turing Scholars Honors Program | BS in Pure Mathematics
Aug 2014–May 2018 | Austin, TX
Cum. GPA: 3.96
CS GPA: 3.97

TEXAS ACADEMY OF MATHEMATICS AND SCIENCE

Early college program | University of North Texas
Aug 2012–May 2014 | Denton, TX
GPA: 4.0

LINKS

Github:// krzysz00
Stack Overflow:// krzysz00
LinkedIn:// kdrewniak

SKILLS

PROGRAMMING

Significant experience:
Python • C/C++ • Rust • Haskell • Common Lisp • Erlang

Some experience:
Assembly • Ruby (Rails) • JavaScript & jQuery • Java • Coq

OTHER TECHNICAL

High-Performance Computing • • Compilers • Optimization • Linux • SQL • Machine Learning

NON-TECHNICAL

Presentations • Technical writing

GITHUB PROJECTS

SWIZZZLEFLOW

Accelerator kernel synthesis.

RUST-KERNEL

Proof-of-concept teaching OS in Rust.

PPC-BOARD-2.0

Modernized rewrite of an unusual forum system in Ruby on Rails.

EXPERIENCE

GOOGLE | Software Engineering/Research Intern

Jun 2019–Aug 2019

- Formulated and pursued research agenda on optimizing accelerator loop nests
- Implemented Tensorflow Lite parser for MLIR compiler

MICROSOFT | Software Engineering Intern, AI & Research

Jun 2017–Aug 2017 | Bellevue, WA

- Developed deep learning models for Bing Maps auto-suggest
- Produced significant projected improvements in result quality

TRUECAR | Software Engineering Intern

Jun 2016–Aug 2016 | Austin, TX

- Developed machine learning solution to combat scraping and improve lead quality
- Synthesized multiple data sources into features

WHATSAPP (FACEBOOK) | Software Engineering Intern

June 2015–August 2015 | Mountain View, CA

- Increased media server reliability and performance
- Overhauled internal alert distribution system
- Reworked testing tools to support encrypted media and messages

RESEARCH

SWIZZLEFLOW, PROGRAM SYNTHESIS GROUP

August 2018–Present | Seattle, WA
Designed and created Swizzleflow, a system for synthesizing optimized inner loops for mathematical operations and a language for representing them with Dr. Ras Bodik.

ELECTRICAL AND COMPUTER ENGINEERING

February 2018–June 2018 | Pittsburgh, PA
Developed, with Dr. Tze Meng Low, an automated high-level loop fusion analysis method based on loop invariants for linear algebra algorithms.

HIGH-PERFORMANCE AND AUTOMATIC COMPUTING

September 2017–January 2018 | Aachen, Germany
With Prof. Paolo Bientinesi, investigated methods for the automatic generation of code to efficiently normalize linear algebra expressions from axioms.

SCIENCE OF HIGH-PERFORMANCE COMPUTING GROUP

September 2016–May 2018 | Austin, TX
Worked with Dr. Robert Van De Geijn to develop techniques for optimizing and optimize the matrix operation $D+ = ABC$ and some others.

AWARDS

2018 Anne Dinning-Michael Wolf Endowed Regental Fellowship

PUBLICATIONS

[1] K. Drewniak. GEMM3: Constant-workspace high-performance multiplication of three matrices for matrix chaining. Honors thesis, 2018.

[2] K. Drewniak. Swizzleflow: Synthesis of irregular data mappings in accelerator kernels using novel pruning abstractions. Qualifying exam report, 2020.

[3] K. Drewniak, J. Helsing, and A. R. Mikler. A method for reducing the severity of epidemics by allocating vaccines according to centrality. ACM BCB, 2014.