

# Krzysztof Drewniak

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5505 15th Ave NE Apt 206, Seattle, WA 98105-3456; US and EU citizenship

**Objective** Seeking full-time software engineer or research position.

## EDUCATION

### UNIVERSITY OF WASHINGTON

#### PHD IN COMPUTER SCIENCE

Sep 2018-Mar 2021 (indefinite pause)  
Seattle, WA | Master's Degree:  
December 2020

### 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

### SWIZZLEFLOW

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.