Matthew Sotoudeh

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Education

University of California, Davis — Davis, CA
BS Computer Science, BS Mathematics; Regents Scholar; GPA: 4.0 — Grad: Jun 2021

Lynbrook High School — San Jose, CA
GPA: 3.9 — Grad: Jun 2017

Experience

Intel AIPG, Office of the CTO — San Diego, CA
Research Intern — Jun 2018 — Sep 2018

- Developed a novel, fully-automated compiler system for heterogeneous, parallel systems.
- Fully automatic lowering of arbitrary linear algebra computations onto fixed-function accelerator instruction sets using a novel three-operand version of TVM IR, efficient sub-graph isomorphism solver, and feedback-driven transformation-space search.
- Can compile programs across any system described as a graph of compute and memory nodes.
- Unified interface to compiler heuristics enables rapid, reproducible testing of new heuristics (including ML-driven models).
- Tests on an upcoming Intel deep learning architecture achieve 3-5X faster execution times than state-of-the-art, hand-optimized kernel libraries.
- Work has already influenced other compiler and software teams across the company.
- "ISA Mapper: A Compute- and Hardware-Agnostic Compiler for Heterogeneous Systems" targeted for publication in late 2018.

Intel Labs — Santa Clara, CA
Research Intern — Jul 2016 — Jan 2018

- Developed state-of-the-art ML parameter compression method. Up to 60% accuracy improvement over existing work after compressing models up to 1000×.
- Optimized compressed matrix-multiplication routine achieves 15× faster inference than MKL.
- Wrote a unified library that simplifies implementation of multiple compression methods in TensorFlow by expressing each method as a weight-generating sub-graph.
- "DeepThin: A Self-Compressing Library for Deep Neural Networks" presented at SysML 2018.

Develop Summer Academy — San Jose, CA
Co-Founder & Instructor — Feb 2016 — August 2017

- Taught over 50 local middle school students programming, leadership, and other life skills
- Developed courses, marketed the camp, handled logistics, and taught classes
- Recognized by our school, district, and House Representative Ro Khana
- Over $\$30,000$ in revenue over two summers.

Action — San Jose, CA
Co-Founder & Chief Software Engineer — Nov 2014 — Jan 2016

- Improved the meeting follow-up experience for 1,000s of meetings at Google, Microsoft, UC Berkeley, and others. Featured on Chrome Web Store.

Skills

Fields:	Systems, Compilers, Programming Languages
Interested Fields:	Cognitive Modeling
Programming Languages:	C, C++, Python, JavaScript, HTML, CSS
Other:	Education, course development

Projects

Docs Plus *JavaScript, jQuery, Chrome and Firefox add-on APIs*
Only add-on library that enables deep integration support with the Google Kix editor

SharpSwift *C#, Swift, Roslyn*
C# - Swift transpiler, one of the first projects to use the Roslyn Compiler and Swift language

More projects can be found at https://github.com/matthewsot

Recognition

Rep. Ro Khanna Congressional Award
Recognized by House Representative Ro Khanna for my role in founding the innovative Develop Summer Academy.

1st Place FBLA State & National Competitions Jun 2014, Apr 2015
Won first place against hundreds of teams across the country for two e-business websites I built and presented.

1st Place Application at CodeDay SV Oct 2014
An early version of our meeting efficiency add-on Action beat dozens of other teams at the CodeDay SV hackathon