Logan Weber

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Education

Massachusetts Institute of Technology — *Cambridge, MA*

PhD in Computer Science — *Sep. 2020 - PRESENT*

- Advisors: Saman Amarasinghe and Michael Carbin
- Research Focus: Programming Languages, Machine Learning, and Systems

University of Washington — *Seattle, WA*

Combined B.S./M.S. in Computer Science — *Sep. 2014 - June 2020*

- Advisor: Zachary Tatlock
- Mentors: Jared Roesch and Tianqi Chen
- Research Focus: Programming Languages, Machine Learning, and Systems

Research Projects

Blockly — *Seattle, WA*

Experimental Virtual Reality Game for Learning Programming — *Mar. 2020 - June 2020*

- Designed a game that teaches programming concepts in a virtual reality environment.
- Led a team of 3 undergraduates to implement the game.

MicroTVM — *Seattle, WA*

Deep Learning on Bare-Metal Devices — *Jan. 2019 - Sep. 2020*

- Created infrastructure in Apache TVM to support compilation and automatic optimization of machine learning models on microcontrollers.
- Acted as the core technical contributor before transferring ownership of the technology to OctoML.

Relay — *Seattle, WA*

Functional and Differentiable IR for Machine Learning — *Feb. 2018 - Sep. 2020*

- Aided development of an intermediate representation for machine learning, featuring a tensor-oriented, dependent type system.
- Relay is used every time Amazon Alexa is asked a question.

Relay Dashboard — *Seattle, WA*

Machine Learning Benchmarking and Analysis Framework — *June 2019 - Sep. 2019*

- Aided design and developement of a system for performing scalable and reproducible machine learning experiments in a language-agnostic fashion.

Apache TVM — *Seattle, WA*

Open Deep Learning Compiler Stack for CPUs, GPUs, and Specialized Accelerators — *Feb. 2018 - PRESENT*

- Became the 8th most impactful contributor (by lines of code modified) out of 300+ contributors, as of 11/30/2019.
- Was awarded reviewer status by the TVM community.

Judgement-Based Grading — *Seattle, WA*

Chrome Extension — *Jul. 2016 - Sep. 2016*

- Built a UI over Canvas's SpeedGrader interface to implement grading improvements based on the PI's prior educational research.

Induction Tutor — *Seattle, WA*

Web Application — *Apr. 2016 - Jul. 2016*

- Built the first ever interface for both teaching induction to computer science students and for automating grading of induction proofs.

Personal Projects

0x10c — *Seattle, WA*

Rust 3D Game Engine — *Sep. 2017 - Dec. 2018*

Exort — *Ellensburg, WA*

Java 3D MOBA Engine Prototype — *Mar. 2014 - Oct. 2014*

ModernGL — *Ellensburg, WA*

Java Library for OpenGL 3.0+ — *Mar. 2014 - July 2015*

Junkbot — *Ellensburg, WA*

Java 2D Platformer — *Sep. 2013 - Dec. 2013*

Tetris *Ellensburg, WA*

Java NES Tetris Recreation *Apr. 2013 - June 2013*

Java2D *Ellensburg, WA*

Java 2D Game Engine *Dec. 2012 - Mar. 2014*

Fallborn *Ellensburg, WA*

Java 2D Dynamic Lighting Engine *Apr. 2012 - May. 2012*

Writing

Fast(ish) Algorithms for Integer Programming

Logan Weber and Josh Pollock *2020*

MIT 6.854 (Advanced Algorithms) Final Project

Living Life On The Low-Power Edge: Tiny Models On Tiny Devices

Logan Weber *2020*

Master's Thesis

TinyML: How TVM Is Taming Tiny

Logan Weber and Andrew Reusch *2020*

Post on TVM, OctoML, and Arm Blogs

Relay: A High-Level Compiler for Deep Learning

Jared Roesch, Steven Lyubomirsky, Marisa Kirisame, **Logan Weber**, Josh Pollock, Tianqi Chen, Zachary Tatlock *2019*

ArXiv Preprint

Relay: A New IR for Machine Learning Frameworks

Jared Roesch, Steven Lyubomirsky, **Logan Weber**, Josh Pollock, Marisa Kirisame, Tianqi Chen, Zachary Tatlock *2018*

Proceedings of the 2nd ACM SIGPLAN International Workshop on Machine Learning and Programming Languages (MAPL 2018).

Experience

Oregon Programming Languages Summer School Attendee *Eugene, Oregon*

University of Oregon *June 2022*

Oregon Programming Languages Summer School Attendee *Virtual*

University of Oregon *June 2021*

Part-Time Research Engineer *Seattle, WA*

OctoML Inc *September 2019 - September 2020*

- Researched methods for running and optimizing machine learning models on microcontrollers.
- Became OctoML's very first intern!

Graduate Research Assistant *Seattle, WA*

University of Washington, PLSE and SAMPL Labs *June 2019 - August 2019*

- Researched methods for performing and analyzing machine learning experiments in a reproducible and scalable manner.

Software Engineering Intern *Santa Clara, CA*

Nvidia, Graphics Drivers Team *September 2018 - December 2018*

- Created a tool to visualize arbitrary hierarchical temporal data (e.g., to visual graphics driver performance, kernel thread scheduling, and lock contention).

Software Engineering Intern *Pittsburg, PA*

Duolingo, Core Learning Team *June 2018 - September 2018*

- Researched methods to more accurately assess learners' language proficiency.

Software Engineering Intern *Mountain View, CA*

Google, Android Camera Team *June 2017 - September 2017*

- Contributed to several open source projects for Android camera testing.

Undergraduate Research Assistant *Seattle, WA*

University of Washington, Blank Lab *March 2016 - June 2017*

- Built educational infrastructure for upper-level computer science courses.

Teaching Assistant *Seattle, WA*

UW CSE Department *March 2016 - June 2019*

- Assisted teaching and grading for upper-level computer science courses.

Hay Baler & Equipment Technician *Ellensburg, WA*

Charlton Farms Inc *June 2014 - September 2015*

- Coordinated with 2-10 other equipment operators to strategically prepare/bale 1000 acres of hay under 90-hour work weeks.

Presentation

TVM Conference 2019 *Seattle, Washington, USA*

Presenter for μTVM *December 2019*

Arm Research Summit *Austin, Texas, USA*

Poster Presenter for μTVM *September 2019*

TVM For Fun and Profit Tutorial at ISCA 2019 *Phoenix, Arizona, USA*

Presenter for μTVM *June 2019*

Paul G. Allen School of Computer Science Research Poster Fair *Seattle, Washington, USA*

Poster Presenter for Relay (2nd Place) *May 2019*

Teaching

CSE 451, Introduction to Operating Systems *University of Washington*

Teaching Assistant *March 2019 - June 2019*

CSE 490Q, Introduction to Quantum Computing and Quantum Programming in Q# *University of Washington*

Teaching Assistant *January 2019 - March 2019*

CSE 410, Computer Systems *University of Washington*

Teaching Assistant *March 2018 - June 2018*

CSE 311, Foundations of Computing I *University of Washington*

Teaching Assistant *March 2017 - June 2017*

CSE 332, Data Structures and Parallelism *University of Washington*

Teaching Assistant *January 2017 - March 2017*

CSE 332, Data Structures and Parallelism *University of Washington*

Teaching Assistant *September 2016 - December 2016*

CSE 311, Foundations of Computing I *University of Washington*

Teaching Assistant *March 2016 - June 2016*

Skills

Rust | Python | C | C++ | Haskell | Java | LaTeX | Bash
VSCode | Vim | Spacemacs | Intellij | Git