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Altan Haan

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Education

University of Washington

2016 – 2020

Bachelor of Science, Computer Science (with Minor in Math), Cum Laude, Departmental Honors

- Cumulative GPA: 3.86 / 4.0, Major GPA: 3.92 / 4.0
- Honors Thesis: *Simulating Dynamic Tensor Rematerialization* [1]
- Advisor: Zachary Tatlock

Publications

Preprints

[1] **Altan Haan**. "Simulating Dynamic Tensor Rematerialization". Thesis. University of Washington, 2020.

[2] Marisa Kirisame[1], Steven Lyubomirsky[1], **Altan Haan**[1], Jennifer Brennan, Mike He, Jared Roesch, Tianqi Chen, and Zachary Tatlock. *Dynamic Tensor Rematerialization*. 2020. arXiv: 2006.09616 [cs.LG].

Experience

Research Experience

University of Washington

May. 2019 – Sep. 2020

Undergraduate Research Assistant, with UW SAMPL and advised by Zachary Tatlock.

- Contributed to the TVM Deep Learning Compiler project, by implementing missing gradients for operators in TVM's Relay differentiable IR, to help enable training in TVM.
- Helped lead a research team on *Dynamic Tensor Rematerialization* [2], which is a novel, fully dynamic, and framework-generic runtime system which enables training dynamic deep learning models in memory-constrained environments. Developed a simulated runtime to explore the algorithm design space and obtain theoretical data, which led to a formal proof of asymptotic performance.

University of Washington

2018 – 2019

Undergraduate Research Assistant, with James Bornholt.

- Performed exploratory research on characterizing the behavior of the conflict-driven program synthesis algorithm developed by Yu Feng *et al.* at PLDI 2018, by reimplementing it in Rosette/Racket.
- Developed a metric for the quality of learnt conflicts, and additional heuristics to improve performance.

[1] Equal contribution.

Industry Experience

OctoML Sep. 2020 – Present

Software Engineer Intern, MLSys Team

– Developing a deep learning training framework for TVM using Relay in Python.

DocuSign Jun. 2019 – Sep. 2019

Software Engineer Intern, Cloud Services Team

– Integrated Terraform AWS and Azure cloud infrastructure automation with an in-house automation/control dashboard.
– Created a unified cloud VM provisioning and management task to boost developer productivity, using PowerShell and Python 3.

Awards

ADA Lynn Conway Research Award 2020

UW Annual Dean's List 2016 – 2018, 2019 – 2020

Service

UW Early Entrance Program Mentor 2017-2018

Relevant Coursework

Computer-Aided Reasoning for Software[2] UW CSE 507

Programming Languages[2] UW CSE 505

Design and Implementation of Domain-Specific Languages UW CSE 402

Machine Learning UW CSE 446

Introduction to Deep Learning UW CSE 490 G1

Natural Language Processing UW CSE 447

Introduction to Distributed Systems UW CSE 452

Accelerated (Honors) Advanced Calculus UW MATH 334-6

Accelerated (Honors) Calculus UW MATH 134-6

[2] Graduate course.