

AMANDA LIU

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**MASSACHUSETTS
INSTITUTE OF
TECHNOLOGY**
Cambridge, MA
2020 – Present

**COLUMBIA
UNIVERSITY**
New York, NY
2016 – 2020

**COLUMBIA
UNIVERSITY**
New York, NY
June 2019 – May 2020

**COLUMBIA
UNIVERSITY**
New York, NY
September 2018 – May 2019

**CARNEGIE
MELLON
UNIVERSITY**
Pittsburgh, PA
May – September 2018

**COLUMBIA
UNIVERSITY**
New York, NY
September 2018 – May 2020

**COLUMBIA
UNIVERSITY**
New York, NY
September 2019 – May 2020

**COLUMBIA
UNIVERSITY**
New York, NY
September – December
2019

EDUCATION

DOCTOR OF PHILOSOPHY
EECS MERRILL LYNCH FELLOW

Electrical Engineering and Computer Science (EECS) department; advised by Prof. Jonathan Ragan-Kelley and Prof. Adam Chlipala; conducting research in formal methods, programming languages, and high-performance systems

BACHELOR OF SCIENCE
3.97 GPA (DEAN'S LIST, MAGNA CUM LAUDE)

Computer Science major (Software Systems) and Math minor; School of Engineering and Applied Sciences

RESEARCH EXPERIENCE

Conducted research under Prof. Ronghui Gu on the DeepSEA blockchain language project; worked on language semantic design and specification as well as formal verification of the functional language to EVM bytecode compiler; implemented using OCaml and the Coq proof assistant

Conducted research under Prof. Stephen Edwards on a project that compiles Haskell to System Verilog for FPGA specification; focused on leveraging Hindley-Milner type inference to perform type partitioning for memory storage level parallelization optimizations

Conducted research under Prof. Jonathan Aldrich on the capability-safe language Wyvern; wrote the architecture design language compiler for automated generation of secure, robust distributed systems

TEACHING EXPERIENCE

Head teaching assistant for COMS 3157 (Advanced Programming); a systems programming course on C/C++ and Unix; held office hours, graded assignments, led review sessions, created instructional videos; maintained grading scripts; head TA and system administrator since Spring 2019

Head teaching assistant for COMS 4115 (Programming Languages and Translators); a compilers and programming languages course; advised groups on a large semester-long programming language design and compiler implementation project; head TA since Spring 2020

Teaching assistant for COMS 6998 (Parallel Functional Programming); an introductory functional programming course focusing on Haskell and its parallelism features; wrote homework solutions; created a testing and grading homework submission scaffolding; held office hours

WORK EXPERIENCE

GOOGLE
Remote
June – August 2020

GOOGLE BRAIN INTERN

Developed and designed a new DSL in Haskell targeting an ISA specific to a novel hardware architecture; work was specific to the domain of ML inference accelerators and hardware design.

GOOGLE
Sunnyvale, CA
May – August 2019

SOFTWARE ENGINEER INTERN

Worked on the JavaScript Closure Compiler in Core Developer Web team; augmented the type system to support bounded parametric polymorphic generic types and annotations; implemented static analysis and syntax-directed optimization transformations.

PUBLICATIONS

POPL
2022

Verified Tensor-Program Optimization Via High-level Scheduling Rewrites

Amanda Liu, Gilbert Bernstein, Adam Chlipala, Jonathan Ragan-Kelley.

AWARDS AND HONORS

**COLUMBIA
UNIVERSITY**

**ANDREW P. KOSORESOW MEMORIAL AWARD FOR
EXCELLENCE IN TEACHING AND SERVICE**

2020

Awarded for outstanding contributions to teaching in the Department and exemplary service to the Department and its mission. Nominated based on evaluations by their supervising faculty and feedback from students in Courseworks or other forms.

**NATIONAL
SCIENCE
FOUNDATION**

GRADUATE RESEARCH FELLOWSHIP

2020

Awarded by the National Science Foundation funding five years of graduate studies to pursue research in the field of programming languages, formal methods, and programming systems.

**MASSACHUSETTS
INSTITUTE OF
TECHNOLOGY**

MERRILL LYNCH FELLOWSHIP

2020

Awarded by the MIT EECS department faculty as part of as part of doctoral program admission offer.

**COLUMBIA
UNIVERSITY**

TAU BETA PI

2018 – 2020

Engineering honor society with membership based on academic performance and service; invited in junior year as a member of the top 8th of the class.

**SPLASH
CONFERENCE**

STUDENT RESEARCH COMPETITION SEMIFINALIST

2018

Extended abstract reviewed and accepted as part of the undergraduate division of the student research competition; attended and presented a poster at the Systems, Programming, Languages, and Applications: Software for Humanity (SPLASH 2018).