

Ryan Thomas Lynch

US Citizen (Eligible for Security Clearance)

EXPERIENCE

Tesla Motors, Autopilot Compiler Engineer

MAY 2024 - AUGUST 2024 | PALO ALTO, CALIFORNIA

Contributed to Tesla's MLIR-based compiler for AI inference

Introduced profile-guided optimization (PGO) through use of hardware

performance counter instrumentation on Tesla's custom runtime

Made multiple upstream MLIR and LLVM contributions

Georgia Institute of Technology, Graduate Research Assistant

AUGUST 2023 - DECEMBER 2023 | ATLANTA, GEORGIA

Researcher in the CRNCH Lab/TINKER Lab under Dr. Tom Conte

Applied canonical and novel compiler techniques for dataflow analysis and instruction scheduling to a novel superconducting computer architecture

Advanced Micro Devices, SoC Virtual Model Development Engineer

MAY 2023 - AUGUST 2023 | AUSTIN, TEXAS

Contributed to AMD's industry-leading SimNow SoC virtual model in C++14

Optimized continuous integration (CI) tooling and performance

Led charge to implement code formatting and code quality standards

Reorganized and rewrote onboarding guides to assist with rapid team growth

Georgia Institute of Technology, Undergrad Research Assistant

JANUARY 2023 - MAY 2023 | ATLANTA, GEORGIA

Student Researcher in the Center for Research into Novel Computing Hierarchies (CRNCH Lab) under Dr. Jeffrey (Jeff) Young

Performed quantum circuit polyhedral optimizations using LLVM's MLIR to translate Python Qiskit circuits into QASM, QIR, etc.

Investigated novel quantum gate reordering and combining transformations

Designed MLIR quantum dialects to convert address semantics to value

semantics using affine, arithmetic, and control flow dialects

AUGUST 2021 - MAY 2022 | ATLANTA, GEORGIA

Implemented on-line phase detection algorithms in C++11 for live simulation

Advanced Micro Devices, Compiler and Verification Engineer

MAY 2022 - AUGUST 2022 | FORT COLLINS, COLORADO

Created compiler for Verilog-like preprocessor language in exploratory project

Created a dialect of MLIR to connect into LLVM's CIRCT project

Participated and contributed in LLVM, MLIR, and CIRCT open-source projects

On-boarded 6 other interns and improved build system tooling and developer

experience through improved documentation of best practices

Created VS Code extension for internal language

Contributed to LLVM's MLIR Visual Studio Code extension

Georgia Institute of Technology, CS Teaching Assistant

MAY 2020 - JULY 2021 | ATLANTA, GEORGIA

Teaching Assistant and Section Lead for Intro to Object-Oriented Programming

Directly taught 50-100 students weekly in recitation and lecture

Met with 20-30+ students weekly in 1-on-1 office hours to teach and debug

Received Thank-a-Teacher awards and direct positive feedback from students

EDUCATION

Georgia Institute of Technology, MS Computer Science

AUGUST 2023 - DECEMBER 2024 (EXPECTED), ATLANTA, GA

Concentration: Computing Systems

Relevant coursework: Parallelizing Compilers, Advanced Software Analysis and

Testing, Advanced Malware Analysis, Advanced Operating Systems, Programming

Language Design, Modern Networks, High-Performance Parallel Computing

Cumulative GPA: 4.00/4.00

Georgia Institute of Technology, BS Computer Science

AUGUST 2019 - MAY 2023, ATLANTA, GA

Concentration: Systems and Architecture & Information Internetworks

Relevant coursework: Data Structures & Algorithms, CS 2110 Computer

Organization & Programming, Systems & Networks, Algorithm Design & Analysis,

Networking, Databases, ECE Digital Design Lab, High-Performance Computer

Architecture, Information Security, Compilers & Interpreters, Operating

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github.com/emosity | ryanlyn.ch

INTERESTS

Computer Architecture, Compilers, Skiing &

Snowboarding, Mountain Biking, Puzzles,

Cybersecurity, Video Games

SKILLS

Programming: C/C++20, Python, Verilog,

x86-64, MLIR, Bash, HTML/CSS/JS, Java, SQL,

VHDL, RISC-V

Software: LLVM/Clang, VS Code, Visual

Studio, gRPC, Protocol Buffers, Git, GitHub,

Gerrit, Jenkins CI, Adobe Creative Suite, IDA

Pro, Docker, Vagrant, LSF, SLURM

Operating Systems: Windows, Ubuntu

20.04/22.04, RHEL7/CentOS, WSL2, macOS,

UNIX, POSIX, Linux, xv6

Communication: Teaching, Presentations,

Customer service, Canvassing, Leadership,

English (native), Spanish (advanced)

LEADERSHIP

Phi Kappa Theta Fraternity, House Manager (Elected)

DECEMBER 2021 - DECEMBER 2022

Oversaw and directed house finances to

coordinate collection and spending of a

budget over \$180,000 on a line-item basis

Directly managed day-to-day operations

and all logistics and labor assignment

Oversaw committees, direct reports, and

logistics operations

dependently-typed, Officer

AUGUST 2022 - PRESENT

Organized and gave talks about compilers

and programming languages

Led exploratory project to add new syntax

and operators to Python

Georgia Tech Marksmanship Club, Treasurer

AUGUST 2020 - MAY 2022

Managed finances for a student-run club

Purchased and sourced ammunition

Trained new and returning members on

gun safety and range etiquette

Handled dues collection and member

standings

Taste the Charity, Inc., Co-Founder and Chief Operating Officer

AUGUST 2017 - JANUARY 2019 | LAWRENCEVILLE, GEORGIA

Co-founded a teen-led non-profit

Raised over \$15,000 for charity

Directed and managed operations, finances

Volunteer Income Tax Assistance, Chief Learning Officer

AUGUST 2016 - MAY 2018

Taught high school students how to file

taxes in an IRS-certified community

program

Systems/OS Design, Processor Design, Parallelizing Compilers
Cumulative GPA: 3.84/4.00, Highest Honors