

Kyle M. Liang

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Carnegie Mellon University

Sep 2019 to May 2025

Ph.D. Candidate / Software and Societal Systems Department

University of California, Los Angeles

Sep 2015 to Jun 2019

BS Double Major / Computer Science and Engineering, Mathematics of Computation

GPA: 3.969

Research Experience

CMU Software and Societal Systems Department, Pittsburgh

Sep 2019 - Present

Ph.D. Candidate, NSF Fellow (Python, JavaScript)

Programming Language systems research on abstracting distribution and timing requirements for cyber-physical systems. Focus on language/compilation/human studies.

- Created TTPython: a language and runtime to write shorter/cleaner distributed, time-sensitive programs
- Created operational semantics to describe intermediate representation and behavior of TTPython
- Designed try-catch syntax and semantics compatible with dataflow-graph intermediate representation
- Wrote a Jupyter Notebook tutorial for TTPython compatible with Google Colab
- Planned submission to TOPLAS on TTPython's system specification with a case study on a 1/10th-scale Connected Autonomous Vehicle application
- Collaborating with CHARTS at Syracuse University on an Urban Flooding Observation application to detect flooding across the city of Syracuse. Currently designing city-wide sensor neighborhood interactions
- Creating user study to determine usability of TTPython vs. Python time library and 3rd party message broker

UCLA Compilers Group, Los Angeles

Jan 2018 - Jun 2019

Undergraduate Researcher (Python, Haskell)

Compilers research focused on Java static analysis improvements

- Created static analysis tool to generate class hierarchy analysis and call graph
- Developed scripts to create class closure in initial program reduction step in delta debugging

Ozcan Research Group, Los Angeles

July 2015 - Jun 2019

Lab Mentor/Undergraduate Researcher (C++, Qt, Python, Matlab, Android)

Nano- and Bio-photonic research on creation of portable and economical optical devices on phones

- Recruited, established, and led undergraduate GUI/Mobile development and server management teams
- Updated RESTful server to multithread client requests for data analysis of Giardia samples
- Attended ERN Conference presenting work on waterborne pathogens DOI: nanoph-2017-0001

Teaching Experience

15-213: Introduction to Computer Systems, Pittsburgh

May 2022 - Aug 2022

Co-Instructor (C)

Instructor of record for summer offering of CMU's intro to systems and architecture 12-week course

- Held and redesigned active learning modules to increase student engagement during class
- Headed small team in course development focused on redesigning the parallel lab

15-122: Principles of Imperative Computation, Pittsburgh

July 2021 - Aug 2021

Co-Instructor (C0, C)

Instructor of record for summer offering of CMU's CS data structures 6-week course

- Conducted remote class and office hours on Zoom
- Developed midterms and final

Kyle M. Liang

Research Experiences for Undergraduates in Software Engineering, Pittsburgh July 2020 - Aug 2021

Research Mentor

Hosted undergraduate researchers over the summer on research projects

- Acted on the committee to select applicants and suggest potential mentor-mentee matches (2021-2024)
- Mentored 3 students (Ian McCormack [Ph.D. CMU], Matthew Makila [Ph.D. UIUC], Gabriel Lee [Jane Street])
- Guided and taught undergraduate students on compilers and the research cycle

Work Experience

Meta, Menlo Park

Jun 2019 - Aug 2019

Software Engineering Intern (OCaml, Javascript, PHP, C++)

Web speed team working on a Javascript compiler and runtime engine

- Added missing features stated under the Javascript Language Specification and compiler optimizations
- Explored possible Javascript optimizations to include in a guided optimization profiler
- Created inline caching profiler to detect missed compiler optimization efforts from poorly written code

Bloomberg L.P., New York City

Jun 2018 - Aug 2018

Software Infrastructure Engineering Intern (C, Git, Python)

Developer of open-source distributed RDBMS comdb2

- Implemented a protocol to apply database logs against a disconnected local caching replicant
- Created test suite and stored procedures to test and expose protocol changes
- Demonstrated Kafka as a message broker to possibly facilitate local caching replication

Gen Digital, Los Angeles

Jun 2017 - Sep 2017

Mobile Endpoint Protection Software Engineering Intern (Java, Android, Perforce, Collaborator)

Responsible for testing and debugging Norton Security and Antivirus

- Designed and created new feature UI entry and help fragments with MVP design with Unit Tests
- Discovered and submitted API specific RTL issue through Google's Android Issue Tracker
- Investigated CPU/Memory profiling and usage through hprof to debug applications

Open-Source Software Development, Los Angeles

July 2016 - Jan 2017

Software Developer (C)

Collaborating with Professor Paul Eggert on GNU utilities and coreutils

- Revised and debugged an implementation of multithreaded grep
- Examined CPU and memory usage of multithreaded grep through gperftools

Technology & Software Domain Expertise

Languages: Java, C/C++, MATLAB, Python, JavaScript, Haskell, OCaml, Git, Perforce, MySQL

Research Focus: Compilers, Types and Programming Languages, Program Analysis, Empirical Methods, Software Engineering, Language Usability