Peter Jia-Chun Li

peteli3.github.io | github:peteli3 | pl488@cornell.edu | (516) 652-3985

Education

Cornell University

M.Eng in Computer Science
May 2019 | Ithaca, NY | GPA: 4.0 / 4.0

B.S. in Computer Science
May 2019 | Ithaca, NY

Selected coursework

Graduate

Language-based security
Network programming languages
Advanced programming languages
Software engineering
Programming languages seminar
Teams and technology

Undergraduate

Structure of information networks
Systems security
Operating systems
(Served as teaching assistant for 5 semesters)
High performance parallel computing

Academic interests

Programming languages
Domain-specific architectures
Systems security
Language-based security

Honors

Deans list
(Last 4 undergraduate semesters)
Excellence in teaching
(All 5 semesters as a teaching assistant)

Leadership

Corporate director (ACSU 2017)
VP operations (CSA 2017)
Planning chair (CSA 2016)

Skills

Programming languages

Python • C • C++ • P4 • Javascript • Ocaml • RISC-V • Java • Swift • LaTeX

Web development

Flask • Vue.js • React.js • Node.js • CircleCI • Meteor • MongoDB

Technologies

Programmable networks (P4) • Elasticsearch • Git • pyopenssl • pyca/cryptography • *nix • NumPy

Experience

Akamai | Software engineer intern · platform security

Jun 2018 - Aug 2018 | Cambridge, MA

- Wrote a Python package that parses SSL certificates, GPG keys, SSH public keys into json using pyopenssl.
- Architected, implemented, unit tested, and deployed a distributed search tool in Elasticsearch that supports a flexible query language over json secrets via an internal web app (KMICC) built in Flask and Vue.js.
- Wrote a Python microservice that periodically updates Elasticsearch datastore by listening for changes in a data delivery channel and applying deltas.
- Committed, pushed, and documented for over 12,000 lines of Python and 2,500 lines of JavaScript.

Cornell University | Graduate teaching & research specialist

Aug 2016 – May 2019 | Ithaca, NY

- Operating systems (3 semesters as undergraduate TA, 2 as head TA)
- Created and iterated on a gitpython package that manages Github for automated, secure coursework delivery.
- Developed and graded coursework, tutored students in complex problem solving, and held weekly office hours.

Selfmade | Software engineer intern · full-stack web & deployment

Jun 2017 – Aug 2017 | New York, NY

- Implemented in-house developer tools and integrated CircleCI continuous deploy to reduce engineering workflow overhead.
- Extended the Node.js REST API and Meteor/React app to support pipelined handling and delivery of video content to app users.
- Wrote, pushed, and re-factored over 6,000 lines of JavaScript.

Research

Implementing the Portable Switch Architecture for P4

Jan 2019 – Present | P4 language consortium

Built a software-based network switch based on the Portable Switch Architecture. Our switch is programmable via the $P4_{16}$ language and supports P4Runtime, a modern agent used for interacting with live P4 switches.

Building an OS with timing-safe information flow security

Aug 2018 - Jun 2019 | Cornell University

Implemented an extension to the RISC-V ISA for navigating information flow control primitives, and migrated a simple real-time OS to use the newly implemented primitives. Also proposed, implemented, and explored implications of using a lattice-based priority algorithm for the OS's thread scheduler instead of numerical preset priority.

Determining topic homogeneity in online sub-communities

Jan 2018 – May 2018 | Cornell University

Studied topic closeness of Reddit sub-communities and proposed an empirical index of closeness by measuring connectivity and spread of various network models created using topic-based representations of reddit posts. This work aimed, in a very small way, to help explain the emergence of social networks.