Newton Ni

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Education

Cornell University - College of Engineering   Expected May 2019

- B.S. in Computer Science — 3.95 GPA
- Coursework — Functional Programming, Programming Languages, Compilers, Algorithms, Computer Systems, Computer Graphics, Distributed Systems

Research Experience

Foster Lab - Cornell Dept. of Computer Science   May 2018 — Current

- Design and implement type system for the P4 network programming language
- Translate informal P4–16 specification into OCaml logic
- Complete P4 developer day exercises

Clark Lab - Cornell Dept. of Molecular Biology and Genetics   May 2017 — Oct 2017

- Employ random forest classifiers to predict coronary heart disease status from genomic data
- Create bash scripts to clean and process thousands of NHLBI genotypes and phenotypes
- Utilize data analysis software commonly used in academia (e.g. PLINK)

Work Experience

Teaching Assistant - Functional Programming and Data Structures   Jan 2018 — Current

- Lead semiweekly lecture and exercise-based recitation of 30 students
- Create review exercises on concepts like monads, interpreters, and streams
- Evaluate student projects and exams for correctness and style

Course Consultant - Honors Object-Oriented Programming   Aug 2017 — Dec 2017

- Hold office hours for 10–20 students, one and a half hours per week
- Teach lab with four other consultants for 25–35 students, one hour per week
- Develop and maintain automatic submission format checker, hosted on a web server

Projects

tigerc - Tiger Programming Language Compiler   Jun 2018 — Aug 2018

- Compiles Andrew Appel's high-level Tiger language down to x86–64 assembly
- Performs lexing, parsing, typing, IR translation, assembly generation, and naive register allocation
- Applies higher-order macros for test boilerplate generation

paxos - Paxos Distributed Consensus Protocol   Nov 2018 — Dec 2018

- Implements a generic replicated state machine library backed by Multi-Paxos over TCP
- Verifies correctness with a JSON DSL-based test harness and extensive logging
- Includes an example chatroom state machine complete with runnable server and client

Skills

Technical

- **Languages:** Rust, Java, OCaml, Python, Javascript, C
- **Software:** Git, LaTeX, Unix, Vim, tmux

Non-technical

- **Music:** Violinist of 11 years, member of Cornell Chamber Orchestra
- **Interests:** Jogging, cooking, volunteering