Newton Ni

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Education

Cornell University - College of Engineering May 2019

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

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

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
- Received average rating of 4.7/5.0 across 19 metrics and 21 student evaluations

Teaching Assistant - Honors Object-Oriented Programming Aug 2017 — Dec 2017

- Held office hours for 10–20 students, one and a half hours per week
- Taught lab with four other consultants for 25–35 students, one hour per week
- Developed automatic server-based submission format checker

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

- Predicted coronary heart disease using random forest classifiers
- Extracted predictors from National Heart, Lung, and Blood Institute genome data
- Analyzed genotypes using PLINK whole genome association analysis software

Projects

tigerc - Tiger Programming Language Compiler Jun 2018 — Aug 2018

- Compiles high-level Tiger language down to x86–64 assembly using Rust
- Performs type-checking, IR translation, naive register allocation, etc.
- Applies macro-based metaprogramming for test boilerplate generation

paxos - Paxos Distributed Consensus Protocol Nov 2018 — Dec 2018

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

gnocchi - Basic Procedurally Generated World Nov 2018 — Dec 2018

- Renders with fog of war and directional shading using JavaScript and WebGL
- Supports multiple concurrent players using a client-server architecture
- Optimizes performance with chunking, bitflags, and occlusion culling

Skills

- **Languages:** Rust, Java, OCaml, Python, Javascript, C
- **Software:** Git, LaTeX, Bash, Unix, Vim, tmux
- **Interests:** Violin, guitar, cooking, reading, technical blogging