Ziyi Lu ←

Seeking **Software Engineer** job

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Education

University of California, Berkeley, Graduating **Dec 2021**
Computer Science BA & Astrophysics BA, **GPA:** 3.768 / 4.0

Select Coursework: Software Engineering, AI, Computer Architecture, Algorithms, Computer Security, Machine Structures, Data Structures, Informational Systems, …

Skills

1. **Languages:** Python, Ruby, HTML, Go, C, Java, RISC-V assembly
* I have used Python & NumPy extensively in astrophysical computing.
2. **Technologies:** Ruby on Rails SaaS framework, git, Heroku, NumPy, MatPlotLib, Jupyter
3. **Methodologies:** Agile team development, Object-Oriented Programming (OOP), REST, Test-Driven Development (RSpec & Cucumber), Continuous Integration (Travis)

Recent Open-source Contributions & Projects

Snap!Con, legacy web app improvement in an Agile team of 5, *2021-1 – ongoing*
1. Open-source framework for programming education conferences. 600 attendees yearly.
2. Worked in an Agile team as a web developer. Ruby on Rails framework with Postgres.
3. Changed backend, frontend, and database to make page elements easily customisable.

Secure File-sharing System on a Hostile Storage, *2020-11 – 2020-12*
1. Designed & implemented an encrypted file sharing system in a team of 2.
2. Designed multi-user file-sharing & selective revocation into the service.
3. Used Golang & interfaced with cryptography & storage APIs.

Web Apps: a Hangman game and a data-driven film database, *2020-6 – 2020-8*
1. Implemented back-ends for various interactive MVC SaaS apps with TDD-CI workflow.
2. Used the Ruby on Rails SaaS framework, deployed on the Heroku cloud.
3. Achieved ~92% test coverage with unit & integration tests in Rspec & Cucumber.

Optimised Maths Module, *2020-4 – 2020-5*
1. Implemented a C maths module for linear algebra.
2. Optimised it with various techniques like cache-blocking & loop-unrolling.
3. Achieved ~7x performance for the matrix power operation.

Data-path Implementation of a Pipelined RISC-V CPU, *2020-2 – 2020-4*
1. Implemented a pipelined standard 5-stage RISC-V CPU design in Logisim.
2. Created ~40 tests in RISC-V assembly for ~30 instructions.
3. Implemented 14 arithmetic functions in its ALU (Arithmetic Logic Unit).

Research

Cell-based Galactic H-alpha/beta Line Radiative Transfer Simulation, *2019-5 – 2019-8*
1. Cell-based Monte-Carlo numerical simulator of photon random walks in a galaxy.
2. Expanded legacy simulator in C, data processing & visualisation in Python.
3. Generated & processed ~15GB of photon data.

Work Experience

Undergrad Student Instructor, UC Berkeley *2020-8 – 2020-12*
1. Taught Optical & Infrared Astronomy Lab to 20 junior & senior students for 8h / wk.
2. Gave tutorials on scientific computing tools & how to write clear, optimised code.
3. Held office hours, often answering questions about programming in Python.

Extracurriculars

Webmaster & Associate Editor for Berkeley Poetry Review, *2018-8 – 2020-8*
1. A 50-year-old magazine that publishes poetry from all over the world.
2. As a webmaster, updated the Wordpress website & participated in a visual overhaul.
3. As an associate editor, meets with the team weekly to review & select poems.