Neil Xu

630-885-6232 | neil_xu@brown.edu | linkedin.com/in/neil-xu-2401 | github.com/neil2001

Education

Brown University *Providence, RI* | Sep. 2020 – May 2024

Bachelor of Science in Computer Science and Applied Math | GPA 4.0/4.0

Relevant Coursework: Data Structures & Algorithms, Linear Algebra, Information Theory, Computer Networks, Software Engineering, Deep & Machine Learning, Operating Systems, Embedded Systems, Compilers, Parallel Computing

Experience

Site Reliability Engineer Intern | *Splunk* *San Jose, CA* | May – Aug 2023

- Built key API, automation, and cryptography components for an internal app, **increasing engineer efficiency by 96%**
- Worked in an Agile team to build API and CLI commands for interaction and task automation with **Puppet Orchestrator** and **AWS S3** using **Golang** and **Python**. Presented demo to Platform organization
- Addressed threat modeling feedback by elevating file security through the design and implementation of an **end-to-end encryption system** for large files using hybrid **RSA + AES** encryption

Undergraduate Research Assistant | *Brown Visual Computing Lab* *Providence, RI* | Jan 2023 – Present

- Researching **diffusion-based methods** for generation of Constructive Solid Geometry given a target example
- Implemented novel corruption and evaluation procedures for a transformer-based diffusion model involving beam search and **Monte-Carlo Markov Chain** methods, **improving baseline performance by 12%**

Software Engineer Intern | *Alarm.com* *Tysons Corner, VA* | Jun – Aug 2022

- Pioneered the design and implementation of a real-time application with a novel 3D interface for engineers to visualize and monitor Azure, AWS, and other cloud Infrastructure using **Python**, **C#**, and **Unity**
- **Accelerated DevOps maintenance pipeline 300%** by consolidating resources and pages into this application
- Constructed data feeders and **backend API** to handle resource updates and client data requests using **Pub-Sub** framework, allowing for real-time monitoring of 100+ company virtual machines
- Designed and built RPG inspired 3D user interface supporting **Terraform** state file upload and parsing into 3D graph structures by implementing **Hierarchical Graph Visualization** algorithm to display resource dependency trees

Undergraduate Teaching Assistant | *Brown CS Department* *Providence, RI* | Sep 2021 – Present

- CS0170: An Integrated Introduction, concepts such as functional programming, OOP, data structures, and algorithms
- CS1570: Design and Analysis of Algorithms, concepts such as DP, Graphs, Geometry, Greedy, NP hardness

Undergraduate Research Assistant | *Brown HCI Lab* *Providence, RI* | Jan 2021 – Present

- **Co-published in CSCW 2022** regarding online communication during COVID-19
- Spearheaded major components for Sochiatrist, a **Flask application** for social media studies, including a **search engine** and **machine learning** powered platform for behavior, sentiment, and topic analysis
- Made extensive use of **PyTorch**, **Pandas**, **Scikit**, **MongoDB**, and **SQL** for data analysis and storage
- Conducted quantitative statistical analysis involving **Kernel Density Estimation**, **Classification**, and visualization of large datasets using **Python** to study sleep data from 100,000+ individuals
- Received **first place** at the 2021 Brown CS Undergraduate Research Symposium

Projects

Weenix OS | *C* Jan – May 2023

- Built a full **operating system kernel** based on Unix with threads, processes, and synchronization primitives
- Implemented device drivers, a Unix based file system, and virtual memory, resulting in a fully functioning operating system capable of managing userspace addresses, running user-level code, and servicing system calls

Accelerated 3D Raytracer | *C++* Oct 2022

- Developed a raytracer from scratch for rendering 3D scenes including implicit objects, lights, and textures
- Implemented a **KD-Tree** acceleration structure, parallelization, supersampling, interpolation, and depth-of-field

3Dash Printer Management Software | *React.js, Express, Node.js, SQL* March – May 2022

- Built a **full-stack** workflow management application with for a 3D printing startup allowing allowing authenticated users to manage orders, assign tasks, archive completed orders, monitor printer status, and take notes

Technical Skills

Languages: Python, Golang, C/C++, JavaScript/Typescript, C#, Matlab, Java, Rust, SQL, HTML/CSS
Technologies: Flask, Echo, React, Rocket, .Net, Node.js, Spark, AWS, Puppet, Bootstrap, PyTorch, Tensorflow
Other Skills and Interests: CAD, Unity3D, 3D Printing, Chinese, Spanish, Saxophone, Weightlifting, Tennis