Faith Luo (she/her)

Software Engineer // CS Researcher

Columbia University | UCLA || Los Angeles
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PERSONAL STATEMENT

Highly motivated **Software Engineer**, **UCLA Graduate Researcher**, and **ex-startup founder** passionate about applying academic rigor to engineering problems. **5+ years** of experience building **high-performance**, **user-driven**, **networked** applications for **live-service** and **real-time** environments using **C++**, **Typescript**, **Python**, and **WebGL**. Columbia Engineering graduate with a strong foundation in theoretical CS, **data structures**, and **algorithms**. Cited researcher in cryptography, HCI, and computer graphics with 90+ citations. Open-source enthusiast with 330+ **Github stars**.

WORK EXPERIENCE

Engineer @ thatgamecompany 2023 -

Architected and engineered **live systems** for **performance-sensitive** and **cross-platform** environments across 2 million+ CCU and dozens of devices. Project Lead on Quest system. Engineering Lead for Trust system, New Daily Quests, Events, Winged Light Improvements, and many other strikes. Collaborated cross-functionally with design, production, UI, QA, and other departments. Specialized in managing full-stack systems across Golang backend, C++ client, and Python integrations. Spearheaded development of novel testing-oriented framework through interaction and integration tests.

Co-Founder @ Dark Forest (twitter.com/darkforest_eth) 2020 - 2021

Co-Founded a company developing the first real-time application for the blockchain using zero-knowledge proofs. Managed and produced a team of 8 engineers, designers, and researchers as PM, lead designer, and engineer. **24k+ followers** on Twitter (@darkforest_eth). Covered by MIT Technology Review. Supported by Ethereum Foundation, 0xPARC Foundation, Thiel Foundation, Mozilla, and others. Project has been cited by academic papers measuring its impact on applied cryptography. Developed highly performant, extensible, and complex windowing web client using React/WebGL. Built Typescript integrations for Solidity, Circom, Firebase. Open-sourced client with 230+ stars on Github.

Applied Cryptography Researcher @ Ethereum Foundation 2020

Developed open-source applications using zero-knowledge proofs and experimental applied cryptography.

WebGL Developer @ Countable Web Productions 2019

Developed map applications for Canadian public service projects using Javascript and WebGL.

Quantitative Developer Intern @ D. E. Shaw 2023

Engineer on Python Infra team. Static and dynamic analysis for developer tooling using Python metaprogramming.

Software Engineering Intern @ Figma 2022

Engineer and PM on Editor Experience team. Developed plugins for FigJam and led Scale Tool strike. Typescript/WebGL.

PUBLICATIONS

[2022] Thomas Chen, Hui Lu, Teeramet Kunpittaya, Faith (Alan) Luo. **A review of zk-snarks**. arXiv preprint arXiv: 2202.06877. 91 citations. [Google scholar link]

RESEARCH EXPERIENCE

Research Assistant @ UCLA AIVC 2025 -

Advised by Prof. Jiayin Lu, Ying Jiang, and Chenfanfu Jiang. Developing performant learning models in Python and C++ for mesh simplification. Working collaboratively with international partners. Mentoring a UCLA undergraduate student.

Research Assistant @ Columbia University 2021 - 2022

Advised by Prof. Tim Roughgarden. Researched zero-knowledge proofs and blockchains. Organized weekly reading group for undergraduate and graduate students. Published paper with 91 citations on arXiv preprint.

PROJECTS

UnitLib - A highly-optimized C++ matrix and vector library supporting arbitrary SI units and beyond using C++20 compile-time programming features. Comparable to or faster than glfw, the industry-standard matrix library, in a fraction of the lines of code, while offering type and unit safety on matrices. [github]

xml-peruse - A typed and memory-optimized XML parser for Typescript/Javascript. [github]

Sappho in Space - A web experiment and interactive game built using a custom real-time ASCII art engine implemented entirely in the browser using React and Typescript. [github] [web game]

Little Planet Procedural - Procedural landscapes generated in the browser. 100+ stars on Github. [github] [demo]

EDUCATION

Columbia University | Bachelor's, Computer Science 2026

GPA: 3.9/4.0. Theoretical Computer Science track. Egleston Scholar (funded research scholarship, ~10/year); Core Scholar Award; Columbia Tau Beta Pi Engineering Honors (all years); Dean's List (all semesters)

Courses (PhD-level): COMS 6998 Readings in Language Design (Bjarne Stroustrop), COMS 6998 Foundations of Blockchains (Tim Roughgarden), COMS 4995 C++ Language Design (Stroustrop), COMS4118 Operating Systems, COMS4610 Computer Graphics, COMS4115 Programming Languages, CSOR4231 Analysis of Algorithms, COMS4705 Natural Language Processing, COMS4261 Cryptography, COMS4236 Computational Complexity, MATH4061 Real Analysis I, MATH4041/2 Modern Algebra I/II

University of California Los Angeles | Visiting Researcher & Non-Degree Student 2025

Visiting researcher in Computer Science and Applied Math, advised by Jiayin Lu.

Supplemental coursework in computer science (GPA: 4.0/4.0).

ORGANIZATION AND TALKS

[2022] Columbia Blockchain Reading Group, presenter, host, and organizer (advised by Prof. Tim Roughgarden)

[2020] *zkSNARKs for Hidden Information Blockchain Games*, presenter (zkSummit 6)

[2020] *Dark Forest: Challenges and Constraints in ZK Gaming*, presenter (EthGlobal)

[2020] *Applied cryptography for games*, presenter/panelist (Stanford Blockchain Conference)

SKILLS

Programming Languages: C++, C, Typescript/Javascript, HTML/CSS, React, Python, C#, Java, Linux shell, LaTeX, etc

Spoken Languages: English (native), Chinese 中文 (fluent), Japanese 日本語 (fluent)