

Zhe (Lawrence) YE

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EDUCATION

ShanghaiTech University, School of Information Science and Technology

Bachelor of Engineering Candidate, Computer Science and Technology

GPA: 3.74/4.0 (Top 6%, 13/252) overall, 3.93/4.0 in major

Shanghai, China

2018 - Expected 2022

University of California, Berkeley, EECS Department

Undergraduate Extension Student, GLOBE Program, Computer Science

Berkeley, CA

Aug., 2021 - Expected May, 2022

HONORS AND AWARDS

Merit Student of ShanghaiTech University

Dec., 2020

Undergraduate Scholarship (Top 7%-15%) in ShanghaiTech University

Dec., 2019

WORK AND RESEARCH EXPERIENCE

University of California, Berkeley & Imperial College London

Berkeley, CA

Undergraduate Researcher PI: Prof. Dawn Song and Prof. Arthur Gervais

Sept. 14, 2021 – Present

- Researching on blockchain bridges characteristics and measurements.
- Researching Miner Extractable Value investigation on multiple blockchains and bridges.
- Implemented data extraction and decode tools for smart contract instrumentation on Ethereum-like VM.
- Implemented a comprehensive blockchain simulator with cross-chain communication, private network like flashbots, different participants like miner and searcher to study blockchain incentive mechanism vulnerability.
- Conducting reinforcement learning on above simulator to extract optimal strategies for different participants to undermine blockchain incentive mechanisms.

System & Software Security Lab (S³L) of ShanghaiTech University

Shanghai, China

Undergraduate Researcher PI: Prof. Fu Song

July, 2019 – Present

- Researching on formal verification methods of the Diem Blockchain (previously named Libra) by Facebook.
- Developed *Movable*, an extensible symbolic execution framework for Move language using Rust.
- Feature includes high-coverage automatic test cases generation, common smart contract bug detection (e.g. integer overflow, time/transaction order dependency) and Hoare Logic based formal verification.
- Proposed a new algorithm for strengthening user-defined specification when verification fails, which can be applied to any formal verification based on Hoare Logic.
- Intensive paper reading and open source code reading. Complicated implementation, involving ~45k lines of code addition and ~30k lines of code deletion in Rust.

DEEMOS Tech and MARS Lab of ShanghaiTech University

Shanghai, China

Full Stack Engineer

Oct., 2020 – Jan., 2021

- Developed a realtime data transporting framework and an Unreal plugin using Aeron.
- Developed and deployed a deep learning face VFX web application using Vue.js.
- Worked on an Instagram-like photo sharing website project using Vue.js and Strapi.js.
- Worked on an AR VFX application project using Unity and Apple ARKit.

PROJECT WORK

Volvis: Real-time Volume Renderer CS271 Computer Graphics II

Spring 2021

- Implemented a real-time volume renderer based on WebGL.
- Implemented volume shadowing feature.
- Implemented a Transfer Function editor based on bazier curve.

ATNet CS120 Computer Network

Fall 2020

- Developed a computer network using sound cards and acoustic signals from scratch.
- Implemented from physical layer to transport layer, providing a reliable data link and supporting ICMP pinging, basic NAT and FTP.

A Classroom Offline Renderer CS171 Computer Graphics I

Spring 2020

- Implemented a global illumination renderer using path tracing.

- Implemented loop subdivision algorithm.
- Implemented a volume renderer using ray casting.

Planet Stranding, A Unity Game Demo *ARTS1303 Unity Game Development*

Fall 2019

- Created a game demo combined Death Stranding and No Man's Sky.
- Used advanced feature of Unity, like IK, animation layer, shaders.

VChain: A Blockchain and Telematics Based Driver Assistance Decision and Insurance Assessment System

The Best Award of BitRun 9102 Hackathon, Hangzhou

April, 2019

The value of VChain comes from the application of driver-assisted decision making and the innovation of the business model, the former relying on blockchain security and computation without latency, and the latter as a result of data aggregation and movement.

- In one scope, multiple car sensors and their data transactions are trusted by the blockchain created by CPChain.
- Artificial intelligence decision making, based on IoT big data. Heterogeneous data interoperability, resulting in big data aggregation.
- Interaction and application of data assets, data assets are leveraging the verifiable characteristics of the main chain to benefit emerging business models such as insurance valuation.

Hexo-theme-next *Open Source Project*

2018 – 2019

Core Maintainer

Hexo-theme-next is the most popular theme of Hexo, a static site generator. It has around 24k stars in total.

- Issue and Pull Request reviewing, refactoring codes from v6.0 to v7.0.
- Developed a social content sharing plugin.
- Fixed a security bug in its visitor counting system which could lead to unauthorized modification of website contents.

TEACHING EXPERIENCE

CS110 Computer Architecture I *Teaching Assistant*

March, 2021 – June, 2021

ARTS1303 Unity Game Development *Teaching Assistant*

July, 2020 – Aug., 2020

SI100B Introduction to Information Science and Technology *Teaching Assistant*

March, 2020 – June, 2020

MISCELLANEOUS

Language: Chinese(Native), English(Fluent); CET-6, TOEFL: 104