# Zhian Li

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## EDUCATION

**University of Southern California**, Los Angeles, CA GPA: 3.95

**Viterbi School of Engineering** January 2022 – May 2023
*M.S. in Computer Science*
**Coursework:** Computer Animation, Mobile Games Development, Advanced Game Project

**Viterbi School of Engineering** August 2018 – December 2022
*B.S. in Computer Science*
**Coursework:** Data Structures, Object-Oriented Design, Discrete Methods in Computer Science, Software Engineering, Algorithms, Artificial Intelligence, Machine Learning, Video Game Programming, Computer Graphics, Operating System
**Honors**: Dean's List, four years in a row (2018, 2019, 2020, 2021).

## WORK EXPERIENCE

**Backend Developer (C++)** May 2021 — August 2021
Tencent Holdings Ltd, Shenzhen
- Worked in a large group (50+ people) with strict development-testing-operation workflow, and modified the legacy back-end billing server to support auto-renewable subscriptions for Tencent Cloud.
- Updated the Common Gateway Interface and Database Structure for new business requirements from Tencent's partners.
- Exercised scripting, memory management, and networking on the multicore environment of the Tencent Cloud server.

**Full-Stack Developer (React)** September 2021 — December 2021
EthSign (Remote)
- Worked with a start-up company in developing a blockchain contract-signing platform. Implemented an asymmetrical AES encryption method that securely encrypts the contract. It binds the automatically generated password to the user's wallet address and doesn't require the user to store the password elsewhere off-chain.
- Adjusted the front-end layout on the contract signing page for the new encryption method using react.
- Created the backend functions for automatic email notifications when the contract is created and signed.

## ACADEMIC PROJECTS

**Encountered-Type Haptic Device (C++, HaRVI Lab Research)** Summer 2022 - Present
- Work as a research assistant at the Haptics Robotics and Virtual Interaction (HaRVI) Lab at USC under the direction of Prof. Heather Culbertson. Develop a new generation of a haptic system that can render both hard and soft objects stably.
- Utilize CAD tools and 3d printers to design and build the haptic device, which uses a rotating motor to dynamically change the hardness of the end-effector (the contact surface) to render materials of different stiffness.
- Build the VR interface for users with Chai3d (OpenGL) and calibrated the motor output using machine learning. The goal is to design user experiments, evaluate the result, and publish at IEEE Haptics Symposium or similar conferences.

**WebGL Rhythm Game (Mobile Game Class Project, Unity, Demo)** Summer 2022
- Led a team of eight people and built a multi-player rhythm game using Unity. The game mechanism was originally designed by our team through integrating fighting game elements into a traditional rhythm game.
- As the team captain, I wrote the core rhythm script using C# and assigned tasks to the different members of the team.
- Analyzed the game data using Unity Analytics. Collected feedback from classmates and updated the game accordingly.

**Offline Ray Tracer (C++, OpenGL) (Simple Image)** Fall 2021
- Implemented an offline ray tracer that is able to create ray-traced image based on input files. It can accurately capture shadows and specular highlights on opaque object including spheres and triangles.
- Utilized super-sampling technique to create anti-aliasing effect on the edge. (See This)
- Calculated multiple reflections rays that capture the mirroring effect on shining surfaces.

## TECHNICAL SKILLS

- Programming Languages: C++ 11, Python, C#, Golang, Java
- Tools: Git, OpenGL, Unity, Unreal 5, MySQL, TensorFlow (Keras), Profiling Tools

## ACTIVITIES

**A Proud and Energetic Trumpet Player of the USC Trojan Marching Band** August 2019 – August 2022