A picture containing spectacles

Description automatically generated**Zhian Li**

Master of Computer Science 23’ & Trojan Marching Band Trumpet 19 - 22

University of Southern California, Los Angeles, CA

Resume: Game, SDE LinkedIn: [Link](https://www.linkedin.com/in/lizhian/)

**Objective**

* Current Master’s Student in CS, experienced in software engineering and also familiar with Computer Graphics and Game Development.
* Experienced working in teams with diverse compositions, large or small, remote or in-person.
* Proactive individual currently seeking Full Time Job opportunities starting in May 2023.

**Education**

* M.S. in Computer Science (Progressive Degree Program)

January 2022 – May 2023

* B.S. in Computer Science

August 2018 – December 2022

**Honors**

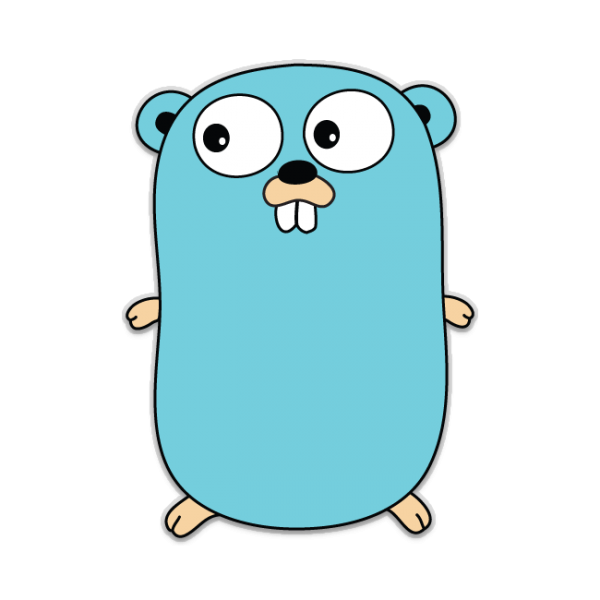
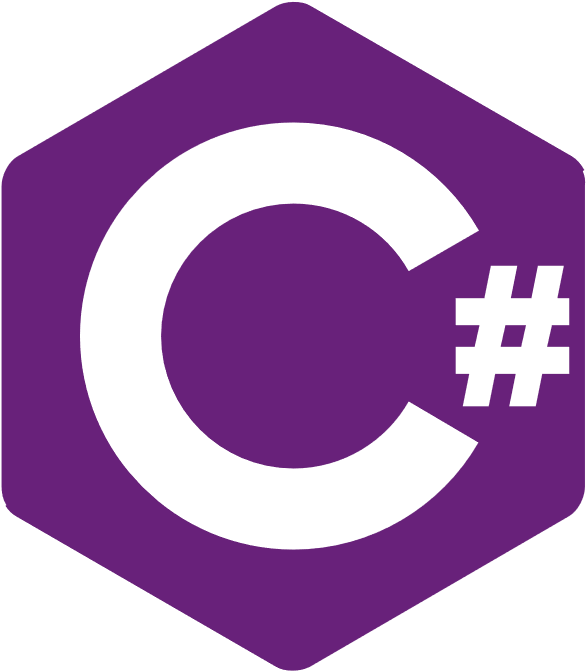
* Dean’s List five years in a row (2018, 2019, 2020, 2021,2022)

**Skills**

**Languages:**

**C++, Python, C#, Java, Go**

**Icon

Description automatically generated Logo

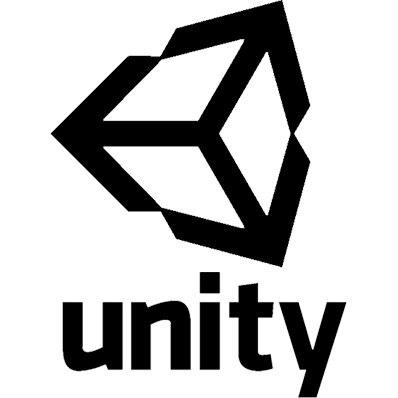
Description automatically generatedIcon

Description automatically generated**

**Tools:**

**OpenGL, MySQL, TensorFlow, Git, Unreal 5, Unity**

**Logo

Description automatically generated Logo

Description automatically generatedLogo

Description automatically generated**

**Portfolio (Game Projects)**

**Unreal 5 Action-Adventure Game (Ongoing Project)**

Lead Usability (UX) Engineer for Team Manas

As a nine-month project, developing a 3D Third Person Adventure Game that focuses on mounted combat. As the lead usability engineer, I manage a usability team of three people. Conduct user testing sessions and record players’ experiences, and work with gameplay designers and engineers to address design issues and bugs in the Unreal Engine.

“agp/Prototype.gif” “agp/Testing.gif”

(i) (ii)

(i): Early development prototype

(ii): Usability testing for weekly builds

**Unity WebGL Rhythm Game (**[**Link**](https://zanelizhian.itch.io/rhythm-fighting-game)**)**

Team Captain for Team Voxaer. Developed a multiplayer rhythm fighting game in the Summer of 2022.

Led an eight-person team and built a multiplayer rhythm game using Unity with an original game mechanism. I assigned tasks to the different members of the team and wrote the C# scripts for core game logic. Analyzed the game data & UX issues using Unity Analytics. Collected feedback from playtesters and updated the game accordingly.

“rhythm/menu.png” “rhythm/demo.gif”

(i) (ii)

(i): Main Menu of the Game (Rhythm and AI difficulty selection)

(ii): Gameplay demo where two players cast different skills following the rhythm to attack the opponents.

**Unreal Engine 5 Demo** (https://youtu.be/llMNwC2vtzI)

Individual Class Project (Took the unreal programming class for fun and it is 100% worth it)

Implemented a UE5 demos based on the Top-Down/FPS Templates. Built the engine and integrated it with Visual Studio.

Created a physics-based puzzle game with character skills (dash, prone), health system, and animation montages.

Learned about motion graphics UI, physics, AI, and Networking of the Unreal Engine 5.

“unreal/topdown.gif” “unreal/fps.gif”

(i) (ii)

(i): Top-Down Puzzle Game

(ii): Multi-player networked FPS Game

**Retro Games (**https://youtu.be/V8Bi1bwdz2E**)**

Individual Class Project (The class started my path as a game programmer)

Used STL2 framework to remake 2D/3D retro games including Pac-Man, Super Mario Kart, Parkour's Edge etc.

Implemented core gameplay features (e.g. Path Finding in Pac-Man, AABB Collision Detection) in C++.

“retro/pacman.gif” “retro/edge.gif” “retro/kart.gif”

(i):

(ii):

(iii):

**Portfolio (Graphics Projects)**

**Ray-Tracer using OpenGL**

A simple ray-tracer that can accurately capture shadow and reflections, here are some of the simple image

Logo, company name

Description automatically generatedShape

Description automatically generatedA picture containing spectacles

Description automatically generated

(i) (ii) (iii)

(i): Shadow and specular reflection for complex geometry

(ii): Anti-aliasing using super sampling methods for simple objects

(iii): Multiple reflection for marbles and glass table

**Physics based jello-cube simulator**

A jello-cube simulated using a mess spring system with Runge-Kutta integrator, rendered with OpenGL

**A picture containing text, athletic game, basketball

Description automatically generatedChart

Description automatically generated**

Left: The bouncing effect when the cube hits hidden walls.

Right: Movement of the cube when OpenGL texture is enabled.

**Portfolio**

**Motion Capture Data Interpolator using Quaternions**

Using quaternions and Bezier curve to interpolate missing data in motion capture sequence.

Original motion from CMU Motion Capture Lab shown in red and interpolated motion shown in green

Rendering software written by Steve Lin, Alla, Kiran, Jernej Barbic, and Yili Zhao.

Graphical user interface

Description automatically generatedGraphical user interface, website

Description automatically generated

(i) Martial Art Sequence (ii) Walking sequence

**Portfolio**

**Inverse Kinematics Calculator with Linear Blend Skinning**

Implemented an Inverse Kinematics (IK) handler with the pseudoinverse method. Using ADOL-C to compute Jacobian matrix and Eigen to solve linear systems. Also implemented forward kinematics and linear blend skinning.

Rendering software written by Jernej Barbic and Yijing Li.

“ik/armadillo.gif” “ik/hand.gif”

(i) Armadillo Monster (ii) Hand demo