Li-Wen Lin

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EXPERIENCES

SING Lab | **Student Researcher** *Supervised by Prof. Michael Neff* Davis, CA | June 2023-Present

- Developing a VR avatar motion record/replay application in Unity using C# and Meta Avatar SDK.
- Implementing a BVH file editor that can merge multiple 3D human skeletal animation using C++ and OpenGL.

CGV Lab | **Student Researcher** *Supervised by Prof. Hung-Kuo Chu* Hsinchu, Taiwan | Sep. 2020-June 2021

- Developed a 3D model placement on real-world footage program using image segmentation and gradient descent.
- Communicated with industrial collaborators and supervisor on weekly basis about current project issues, resolutions, and system performance.
- Automated project pipeline via Shell Script, resulting in 20% reduction of testing time.

National Tsing Hua University | **Teaching Assistant** Hsinchu, Taiwan | Sep. 2020-Jan. 2021

- Resolved 40+ students' questions in "Computer Graphics and Application" course, increasing overall scores by 20%.
- Lectured topics on GLUT, scene rendering, Blinn Phong Lighting, and fragment shaders in OpenGL.
- Reduced 50% grading time by creating collaborative spreadsheets that incorporated multiple grading metrics.

BioPro Scientific | **Firmware Development Intern** Hsinchu, Taiwan | July 2019-Sep. 2019

- Developed functions in C for embedded devices that calibrate and convert bit signal of voltages to readable data.
- Collaborated with developers via Git; refactored legacy code, achieving 30% size reduction of source code.

EDUCATION

University of California, Davis Davis, CA | Sep. 2021-Dec. 2023 (Expected)

MS in Computer Science GPA: 3.9/4.0

Relevant Courses: Applied Linear Algebra, Character Animation, Geometric Modeling, Computational Design

National Tsing Hua University Hsinchu, Taiwan | Sep. 2016-June 2021

BS in Computer Science, minor in Foreign Language and Literature Senior GPA: 3.66/4.3

Relevant Courses: Programming, Computer Graphics, Algorithm, Data Structure, Operating System, Software Studio

SKILLS

Languages & Techniques	C/C++, C#, GLSL, Python, Object-Oriented Programming, Reinforcement Learning
Tools & Libraries	Unity, Git, OpenGL, WebGL, Eigen, OpenCV, PyQT, PyTorch
Environments & Software	Ubuntu, Blender, Maya, Cinema 4D, After Effects

PROJECTS

Real-Time Hardware Ray Tracing Engine On Going

- Accelerated the rendering process by implementing ray tracing inside fragment shader with OpenGL and GLSL.
- Set up material class for metal/glass objects and added interactable camera to walk around the 3D space.

3D Quadruped Walking via Deep Reinforcement Learning in Unity June 2023

- Set up compound colliders and joints' DOF on a rigged model and registered them into action space for training.
- Designed reward functions, succeeding in training a cat model to perform natural posture using PPO algorithm.

3D Truss Optimization May 2022

- Derived and implemented displacement-based compliance minimization algorithm; solved equilibrium using sparce Cholesky factorization to generate self-supporting cantilever and visualized it using OpenGL.

Treasure-Hunt Game in OpenGL Jan. 2020

- Generated terrain using height map; implemented normal mapping, differential rendering for realistic game scene.
- Incorporated collision detection, particle system and fire simulation in object-oriented manner.

Tetris on Self-Designed RISC-V Game Console Dec. 2022

- Developed system call APIs in C++ and Assembly for drawing sprites; recreated fully functional Tetris with the API.
- Controlled game flow by a state machine, resulting in 90% acceleration of response time and eliminated crashes.

ACTIVITIES & LEADERSHIP

Meichu Game Preparation Committee | **Chairperson and Publicity Manager** July 2019-May 2020

- Led 30 members to hold the official sports event between NTHU and NCTU and attracted 5000+ audiences.

ANUT 3D Animation Studio | **President** July 2017-June 2018

- Created storyboard and composited scenes that were modeled and rendered with Cinmema4D as final compositor.
- Coordinated production schedule among a four-member team, enabling us to publicly showcase our animation.

Summer Universiade 2017 | English Translation Volunteer July 2017

- Provided assistance for international athletes regarding stadium information and Mandarin translation.