Zhenyuan Zhang

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Education

University of Michigan **Ann Arbor**

Master of Science in Computer Science *Sep. 2021 – May 2023*

Core courses: Parallel Computing, Category Theory, Motion Robotics

University of Michigan **Ann Arbor**

Bachelor of Science in Computer Science, GPA 3.8 out of 4.0 *Sep. 2019 – May 2021*

Core courses: Computer Architecture, Data Structures and Algorithms, Operating Systems, Compiler Construction, Game Development, Robotics Kinematics and Dynamics

University of Michigan – Shanghai Jiao Tong University Joint Institute **Shanghai**

Bachelor of Science in Electronic and Computer Engineering, GPA 3.6 out of 4.0 *Sep. 2017 – Aug. 2021*

Core courses: Engineering Probabilistic Methods, Differential Equations, Linear Algebra, Discrete Mathmetics

Experience

Tencent Games

Senior Graphics Engineer *Feb. 2023 – Present*

MagicDawn: A distributed GPU-accelerated light baking system based on OptiX 7

- Developed a high-performance light baking solution serving over ten game projects including *Roco Kingdom: World*
- Optimized baking performance and quality for large-scale open-world games

Real-Time Global Illumination Plugin for Bevy

Programmer *Jan. 2022 - Feb. 2022*

An extension for the bevy game engine which implements global illumination using voxel cone tracing

- Built with WebGPU, a modern GPU rendering and computing API
- Developed pipelines for voxelizing the scene, generating mipmaps and tracing the voxel data
- Published as a 3rd-party plugin to `crates.io`

Procedural Animation Research

Leader *Jan. 2021 – Apr. 2021*

A research project seeks to introduce methods of motion synthesis in robotics into animation systems

- Wrote a differentiable physics simulation with hard contacts
- Generated the physically-correct trajectory for characters offline
- Applied to real-time game-like applications using motion matching and IK

Undergraduate Game Development

Designer and Programmer *Oct. 2020 – Dec. 2020*

A game project done by a team of four in one semester with `Unity Engine`

- Designed core mechanism focused on planning and executing
- Designed the code architecture based on event channels (pub-sub design pattern)
- Implemented enemy AI with complex but reasonable behavior using `Goal Oriented Action Planning`

Research in ARM Lab on Trap Aware Model Predictive Control

Student Researcher *May 2020 – Feb. 2021*

An online model-based controller for escaping traps in novel environments

- Implemented baseline based on `Guided Policy Search` in `Python`
- Implemented baseline based on `Soft Actor-Critic` in `Python`

WolverineSoft Studio Game Project

Unity Programmer *June. 2020 – August. 2020*

A 3D first-person stealth horror game where the player must traverse through a castle avoiding horrible monsters

- Worked over the course of one semester with a team of 30 developers
- Created enemy animations using trajectory optimization
- Implemented an easy-to-use interacting system
- Implemented dialogue system for narrative purpose