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

Work 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

Project Experience

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