

Zhenyuan Zhang

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Education

University of Michigan

Master of Science in Computer Science

Core courses: Parallel Computing, Category Theory, Motion Robotics

Ann Arbor

Sep. 2021 – May 2023

University of Michigan

Bachelor of Science in Computer Science, GPA 3.8 out of 4.0

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

Ann Arbor

Sep. 2019 – May 2021

University of Michigan – Shanghai Jiao Tong University Joint Institute

Bachelor of Science in Electronic and Computer Engineering, GPA 3.6 out of 4.0

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

Shanghai

Sep. 2017 – Aug. 2021

Experience

Voxel Cone Tracing Global Illumination

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

Parallel A* Search on GPU

Designer and Programmer

Dec. 2021 – Jan. 2022

A research project on paralleling A* searching algorithm on a GPU

- Implemented heap, hashtable and memory pool on GPUs in CUDA and C++
- Got an approximately 10x speedup on Quadro RTX 4000 than the single-threaded version on i7 8700

Procedural Animation Project

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

Skills

Programming Languages:

- C++: Have good coding style; Have experience in multiple projects
- Rust: Understand ownership, lifetime and traits; Have project experience

Game Engines: Unity, Bevy (Written in Rust)

Others: Git, Jira, Blender