# Tsingtao Zhang

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**Portfolio Website**: zhangtsingtao.github.io/portfolio-website

## Projects

**Ocean Simulator** May 2024 Graphics Programmer
- Developed a real-time interactive water renderer using GLSL in OpenGL, based on Whitted ray tracing.
- Implemented real-time caustics effects to simulate underwater light behavior, enhancing visual realism.
- Created a clickable interaction feature that initiates water circle waves on the surface, adding an interactive element to the simulation.
- Applied tone reproduction methods to adapt to a wider range of image's brightness levels.

**Purr Decor** Dec 2023 Programmer
- Implemented a grid-based building system to support precise placement and alignment of furniture.
- Developed stacking mechanics, allowing furniture to be layered and maximizing player creativity.
- Created an intuitive asset selection interface, enhancing the overall player experience.

**Cutie Tower Defense** July 2023 Programmer, Technical Artist
- Designed and implemented an object pooling system to optimize performance.
- Developed tower behaviors and an enemy route-changing system to enhance gameplay strategy.
- Created environmental assets, contributing to the visual appeal and thematic consistency of the game.

## Experience

**VR Exercise Game Research** May - Aug 2024 Graduate Research Assistant
- Enhanced an existing project by resolving leftover issues and optimizing gameplay for extended user engagement and reliable data collection.
- Configured a wireless environment for seamless data transfer and real-time streaming of headset imagery, facilitating effective analysis and intuitive observation.
- Developed a physics-based AI shooter with auto-aiming and block-avoiding capabilities, adding depth to gameplay and challenging user reflexes.

## Skills

**Softwares/Skill Sets:** Unreal 5, Unity, OpenGL, CMake, Visual Studio, TCP/IP, Blender, Substance 3D, Photoshop, Github, Perforce, Trello, Agile Development, VR Development.

**Programming Language:** C/C++, C#, GLSL, HLSL, Socket, Python, HTML, CSS

**Speaking Language:** English, Chinese (Simplified and Traditional)

## Education

**Game Design and Development, Master of Science** August 2023 - May 2025, Rochester, USA. Rochester Institute of Technology.

**Bachelor of Engineering** Sep 2018 – June 2022, Beijing, China China Agricultural University, College of Water Resources and Civil Engineering, Overall GPA: 3.44

Career-related courses: C and C++ Programming Language, Python Language Programming, Web Technology, Linux, Database Principles and Experiments, Data Structure

## Extracurricular Activities

**Bass in China Agricultural University Choir** Participated in 4 performances in Beijing and 1 national competition with gold price.