# ZIBO YE

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Game Engine Infrastructure | AR/VR | Real-time Graphics | GPU Performance Engineering

## SKILLS

- Fluent in modern C++ with 4 years of academic project experience and 2 years of professional experience
- Proficient in HLSL, GLSL, DirectX 11, 12 and Vulkan
- 2 years' professional experience with game engine development, physic simulation integration and GPU performance engineering
- Proficient in Unity AR/VR game development, experienced with Unreal Engine infrastructure development
- Experienced with CUDA and GPU parallel programming paradigm
- Experienced with Python and C#
- Tools & Platform: Linux, Visual Studio, CMake, RenderDoc, Microsoft PIX, Nsight Graphics

## WORK EXPERIENCE

### Game Engine Programmer | NetEase Inc.
June – Aug 2019, July 2020 – July 2021, Feb – July 2023

Project: Justice Online, a Chinese MMORPG developed with a proprietary game engine · Modern C++, HLSL, DirectX 11/12

Collaborated with interdisciplinary teams to enhance the game engine infrastructure for Justice Online, leveraging modern C++ and DirectX 11/12, focusing on physics simulations, performance optimization and visual effects crucial for immersive gameplay.

- Collaborated with a research scientist to integrate and refine a CPU-based multi-threaded soft body simulation and a GPU-based real-time fluid simulation solution, successfully delivered in game for Justice Online. Optimized for high performance on mainstream CPUs and GPUs, achieving notably efficient fluid simulations with 30k particles within 1ms on an RTX 2070. Video
- Led the development of a GPU compute framework and implemented parallel algorithms, such as reduction and scanning, optimizing to comparable performance with existing CUDA implementation, showcasing my skills in GPU parallel programming and building infrastructure for advanced graphics systems.
- Engineered an instanced bullet system that significantly reduced CPU/GPU workload, replacing the previous system and delivering a 10% framerate increase, demonstrating my capability to make architectural decisions for efficient software delivery.
- Implemented toolchain enhancements that halved engine compilation times and improved the workflow for the asset team through features like fuzzy search and auto-save in editors, reflecting my commitment to the convenience and practicability of the toolchains for both developers and artists.
- Authored an uber-shader used by over 20 VFX artists, and devised a complex particle system, underlining my contribution to improving the expressiveness, quality and efficiency of the artist pipeline.

### AR/VR Software Engineer Intern | TDG | Apple
May – Aug 2022

Project: RealityKit, Apple Vision Pro · Modern C++

- Designed and implemented a scene understanding replay and profile tool on RealityKit that helps with the internal testing workflow of Apple Vision Pro using C++.

## PROJECT EXPERIENCE

### Vulkan Graphics Engine
Jan 2024 - Now

Semester-long project for Real-time Graphics course · Modern C++, Vulkan, GLSL

- Initialed a Vulkan-based graphics engine with custom scene graph loading and rendering. Planned to support Render Graph, Path Tracing, Mesh Shading and more. Code

### HDR Infrastructure for 3D Gaussian Splatting
Dec 2023

Final project for Computational Photography · Modern C++

- Incorporated HDR pipeline support into COLMAP, an image pre-processing tool for 3D Gaussian Splatting and many NeRF methods. Video

### INTENT
Aug – Dec 2023

Empathy-Building Tool for Neurotypical-Autistic Workplace Interaction · Unity, WebGL, C#

- Designed and implemented most game systems and mechanics in Unity, while collaborating with a 5-person interdisciplinary team, 2 faculty advisors and 6 sponsors from CMU and University of Maryland.

## EDUCATION

### Carnegie Mellon University
Pittsburgh, PA

Master of Entertainment Technology · Sept 2021 – Aug 2022, Sept 2023 – May 2024 (Expected)

Courses: Physically-based Rendering, Computational Photography, Real-time Graphics

### Peking University
Beijing, China

Bachelor of Science in Intelligence Science and Technology, GPA 3.59/4.0 · Sept 2016 – June 2020