

# Tianyi Zhao

Software Engineer & Game Developer

Email: [ziutinyat@gmail.com](mailto:ziutinyat@gmail.com)

Phone: +1 (412) 503 2371

Portfolio: <https://ziutinyat.github.io>

## Experience

### Niantic Inc, Core Infrastructure

Software Engineer, full-time

Sunnyvale, CA  
03/2022-present

- Develop and maintain C++ infrastructure for Niantic games, including:
  - Dynamic caching map entities system to support intense memory access
  - Cheat-proof authentication management and session control
  - Secure multi-threading Client RPC and server communication
- Cross-functional collaboration and supports:
  - Support game teams with debugging and optimization in Unity
  - Assist server team with problem solving and technical design
  - Collaborate with release team for internal and external library releases

### Visual Concepts (2K), NBA 2K Presentation

Software Engineer, full-time

Novato, CA  
08/2019-01/2022

- Developed and initiated internal tools in C# and C++:
  - “Director” for data-driven scripting and real-time event visualization
  - “Marker Edit” for in-game location data simulation and manipulation
- Implemented game features and UI overlays:
  - Implemented and optimized open-world stores and NPC system
  - Implemented UI flow and data binding for arena game UI overlays

### CMU Perceptual Computing Lab, OpenPose

Research Assistant

Pittsburgh, PA  
05/2018-05/2019

- Developed the OpenPose 3D pose reconstruction Unity demo for CVPR 2018
- Developed the open-source Unity plugin for OpenPose on GitHub (650 stars)

## Education

### Carnegie Mellon University (CMU)

Master in Entertainment Technology

Pittsburgh, PA  
09/2017-05/2019

- Projects: 4D Engine, Maxis VR, Alice Adventure
- Courses: Computer System, Computer Graphics, Technical Animation, BVW

### The Hong Kong Polytechnic University (PolyU)

BSc in Internet and Multimedia Technology

Hong Kong  
09/2013-05/2017

- Courses: OOP, AI, Database, App Dev, Game Dev
- Exchange student to University of Central Florida (UCF)

## Projects

### 4D Engine (Unity VR demo)

Individual developer

CMU  
01/2019-05/2019

- Conducted 4D mathematical equations and implemented 4D transformation system
- Constructed 4D mesh structure and projection pipeline
- Developed a VR demo in experience of 4D space

### Computer Graphics (C++ 3D Rendering and Optimization)

Programmer

CMU  
01/2018-05/2018

- Implemented CPU ray-tracing rendering system with BRDF
- Optimized the rendering system with Monte Carlo cut and BVH
- Implemented noise cancellation and focus blur effect

**Alice's Adventure (Front-end development)**

CMU

Lead programmer, front-end developer

01/2018-05/2018

- Developed an adventure game creation tool to teach programming and game design
- Implemented the block-based coding editor and designed the coding blocks
- Designed the software architecture and conducted system integration

**Rendering Technology (OpenGL and GLSL)**

CMU

Individual developer

01/2019-05/2019

- Studied OpenGL and standard render pipeline
- Implemented VFX (lighting, outline, edge thickness)

**Technical Simulation (Research study and implementation)**

CMU

Individual developer

01/2019-05/2019

- Studied and implemented APIC fluid simulation using C++ in 2D
- Implemented spring-mass cloth simulation and researched with integrators
- Implemented skeletal animation with skinning and inverse kinematics

**Ripple Blossom (Indie Game Dev)**

Hong Kong

Level designer

03/2017-03/2018

- Won the "Best Theme Integration Awards" in GGJ 2017
- Designed mathematical puzzles cores and levels
- Published to App Store and TapTap and received over 60k downloads

**Skills**Professional programming in **C++, C#, C, JS, Java, SQL**Proficient in **Unity 3D, Visual Studio, OpenGL, Git, Perforce**Master of problem solving in **3D Mathematics, Physics**

Languages: English (proficient), Chinese (native), Cantonese (intermediate)

Experienced music composing and editing, piano performance