JUNHAO WANG

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EDUCATION

University of Southern California (USC), Los Angeles, CA — Aug. 2019 - May. 2021
Master of Science in Computer Science — GPA: 3.90 / 4.0

Israel Institute of Technology (Technion), Haifa, Israel — Jul. 2017 - Aug. 2017
Summer Program of Machine Learning — Top 15%

Shantou University (STU), China — Sep. 2014 - Jun. 2018
Bachelor of Engineering in Computer Science — GPA: 3.74 / 4.0 (Top 2%)

WORK EXPERIENCE

Software Engineer II, Game Tech, Amazon Web Services [C++, C#, Java, Go, TypeScript, Python] — Jun. 2022 - Present

Amazon GameLift Streams - *Product Page*

- Worked on launching a new AWS service (Amazon GameLift Streams) that streams games at up to 1080p 60 FPS to any device
- Designed and implemented internal streaming scoring system that is aimed to improve streaming quality via WebRTC protocol
- Being in the service on-call rotation and contributed to improvements on technical documentation

Open 3D Engine (O3DE) - *GitHub repo* & *Contribution history*

- Published 70+ pull requests to O3DE repositories, reviewed 140+ pull requests from peers, and created 40+ GitHub issues
- Improved and optimized Prefab system for building game objects in large scenes and refactored undo/redo editor workflows
- Developed Prefab Override features and added visualization in Entity Outliner and Inspector to enable users editing overrides
- Contributed to a new *Prefab Developer Documentation* for the Discord community to learn about how to develop the system

Software Engineer I, Alexa Speech Recognition, Amazon [Java, Python] — Jul. 2021 - Jun. 2022

- Worked on a high-TPS AWS service that processes real-time contextual dialog data to improve recognition accuracy by 10%
- Collaborated with research scientists to design and build experimental tools to test and evaluate contextual dialog models

Course Grader (Volunteer), GAMES 101: Introduction to Computer Graphics [C++] — Jun. 2021 - Nov. 2021

- Organized the graphics course in Spring 2021, scheduled meetings, and graded assignments and projects for students

Team Leader & iOS Developer, Campus App at STU [Objective-C] - *Team & App* — Oct. 2015 - Aug. 2017

- Created an iOS campus app in two months and released 14 versions on App Store with a 4.7 / 5.0 rating and 15,000+ users
- Ranked 7th out of 300+ apps in the First China iOS App Development Competition in 2017

GRAPHICS & GAME PROJECTS

Palico Engine: Metal-Based Game Engine [Swift, Metal] - *GitHub repo* & *Screenshot* — Dec. 2021 - Jan. 2022

- Developed a small game engine application with Metal API and Cocoa that supports multiple layers, event system, and editor
- Built UI with ImGui and contributed to open-source project SwiftImGui by converting the latest macOS backend to Swift (*PR*)
- Created a renderer encapsulating command encoders and pipeline states and a shader library that complies MSL shaders
- Made an entity component system MothECS that manages entities and components with bitmasks and supports view operation

Forker Renderer: CPU-Based Rasterizer [C++, CMake] - *GitHub repo* & *Results* — Dec. 2020 - Jul. 2021

- Achieved Blinn-Phong and PBR (Cook-Torrance BRDF) shading as well as texture mapping with wrapping and filtering modes
- Included perspective / orthographic projections in camera model and achieved Perspective-Correct Interpolation
- Enabled soft shadow effect in shadow pass using PCF-based Percentage-Closer Soft Shadow (PCSS) algorithm
- Built G-buffers that support Screen-Space Ambient Occlusion (SSAO) with noise reduction filter (two-pass Gaussian blur)

Plan Odyssey: 3D Exploration Unity Game [C#, HLSL, Collaborate] - *Game trailer* & *Presentation* — Jan. 2021 - Apr. 2021

- Collaborated with two students on a sci-fi exploration game where players play as astronauts to explore outland planets
- Implemented smooth player control, Cinemachine cameras, walk and jump animations, jetpack system with particle effect
- Practiced HLSL shaders under Universal Render Pipeline and made topographic scanner and volumetric light cone effect
- Learned compute shader techniques and achieved beautiful large-scale grass without noticeable FPS drop (*blog post*)

TECHNICAL SKILLS

Programming Languages	C/C++, C# (.NET), TypeScript, Java, Python, Switf, Objective-C, MSL, GLSL, MATLAB
Tools & Frameworks	Visual Studio, Unreal Engine (Blueprint), Unity, Metal, OpenGL, ImGui, CMake, CDK, WebRTC
Relevant Courses	Data Structures, Algorithms, Computer Graphics, High Quality Real-Time Rendering