

Ailun (Allan) Pei

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Education

Arizona State University , Tempe, AZ Master of Science in Computer Science	Jan 2024 – May 2025
Arizona State University , Tempe, AZ Bachelor of Science in Computer Science, magna cum laude	Aug 2020 – Dec 2023

Technical Skills

Graphics Development: Unity, Unreal Engine, WebGL, Three.js, OpenGL, DirectX, Shader Programming, MonoGame
Creative Tools & Automation: Adobe Photoshop, Adobe Illustrator, Adobe After Effects, Sketch, Figma, Blender, Cinema 4D
Languages: C#, C++, Python, JavaScript, TypeScript, Swift, Kotlin, Java, SQL, Bash, HTML/CSS, HLSL, GLSL
Web & Backend: React, Node.js, Vue.js, Flask, FastAPI, RESTful API, Git, GitHub, JSON, XML, MySQL, Docker, AWS, CI/CD
Data & ML: PyTorch, TensorFlow, NumPy, pandas, scikit-learn, Matplotlib, D3.js, Statistical Analysis

Experience

Software Engineer Intern Feishu Extreme Trading Technology Co., Ltd.(CME Group-listed ISV)	Jun 2024 – Aug 2024 Shanghai, China
<ul style="list-style-type: none">Built enterprise security modules for a large-scale C++/MFC trading terminal, including configurable screen-lock dialog, password validation, and idle-timeout policy, enhancing workflow safety and reducing session-related errors by 15%Engineered GDI double-buffered rendering with custom DC and bitmap to eliminate UI flicker, improving rendering stability and interface performance by 20–30%Optimized event handling in PreTranslateMessage and integrated INI-driven configuration with reusable UI components (status bar, tab, password input), ensuring consistent user interaction and reducing duplicate UI code	

Projects

Unity FPS Game with AI Navigation and Shader Effects	May 2022
<ul style="list-style-type: none">Built a 3D first-person shooter in Unity with navmesh-based AI enemies featuring patrol and chase logic, integrating complex state machine behavior for responsive enemy interactionsImplemented shader-based visual effects including explosions and muzzle flashes, handling player input, shooting mechanics, and animation states through modular C# scriptsDesigned modular systems including scene transitions, health management logic, and item pickup mechanics, ensuring scalable and maintainable code architecture	

MonoGame Game Development Suite with Custom Shaders	Spring 2023
<ul style="list-style-type: none">Developed multiple game prototypes using MonoGame framework in C#, including a whack-a-mole arcade game, a 2D side-scrolling FPS, and a 3D shooter, demonstrating versatility across different game genres and dimensionsImplemented particle systems, enemy spawning logic, and collision detection from scratch; integrated custom compute shaders for physics calculations in 3D shooter prototypeDesigned modular shader pipeline enabling designers to swap visual effects without touching core gameplay code, promoting separation of concerns between technical and creative teams	

Spherical Conformal Parameterization of 3D Meshes	Fall 2024
<ul style="list-style-type: none">Implemented a folding-free spherical conformal mapping pipeline for genus-0 surfaces using Python/NumPy/SciPy to support geometry processing applicationsConstructed cotangent Laplace–Beltrami operator and area-based mass matrix, initialized with eigenvector embeddings, and optimized harmonic energy via orthogonality-constrained updates with line searchReduced harmonic energy by approximately 0.4% to stable minimum within 1,000 iterations, producing stable spherical embedding with uniform coverage and no fold-overs	

WebGL Visualization Suite – Interactive Shader Playground	Spring 2023
<ul style="list-style-type: none">Engineered interactive WebGL demos from scratch with custom GLSL vertex/fragment shaders supporting Phong and Gouraud shading, including parametric geometry generation (torus, sphere, cube)Implemented camera control system with spherical coordinate transforms, supporting rotation and zoom via mouse interaction with gimbal lock handling and viewport normalizationDeveloped real-time lighting system with dynamic light positioning, material parameter adjustment, and reflection/collision detection for interactive object morphing	

Academic Experience

Teaching Assistant (Undergraduate & Graduate) & Grader	Jan 2023 – May 2025
<ul style="list-style-type: none">Supported 250+ students across 5 courses, including C++ (as grader) and multi-level C#/MonoGame shader programming (as teaching assistant); held weekly office hours for 40–60 students per semesterDelivered guest lectures on advanced shader techniques, graded 200+ assignments with detailed feedback, improving students' shader programming proficiency and maintaining strong class attendance	