

CHENGGONG (EDWIN) LIU

GPU and Graphics Software Engineer

Native graphics, profiling and performance tooling | Available Dec 2026

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Graduate candidate building native graphics and performance tools across Unity, C#, HLSL and D3D12. Diagnoses runtime stalls, evaluates GPU primitives against external implementations and measures data-layout lifecycle costs.

SELECTED GRAPHICS AND PERFORMANCE PROJECTS

Shader Hitch Pipeline

2026

Unity / C# / D3D12 | [Project](#)

- Reduced repeated driver-attestation checks from **~563 ms to 0.27-0.42 ms** in native Unity/D3D12 diagnostics; the repaired Boat Attack cohort completed **16/16 full routes**. **Draft PR**; overall scheduler speedup remains unproven.

HLSL Kernel Pipeline

2026

C# / HLSL / D3D12 | [Project](#)

- Built a D3D12/HLSL primitives SDK with explicit RTS and AMD backends. A **70-process native confirmation** found a **1.2404x ratio in one 2²⁵-pair sort case**; six other comparisons favored external implementations.

Data Layout Calibrator

2026

Unity / Burst / IL2CPP | [Project](#)

- Built an AoS/SoA/AoSoA selector including conversion and export costs. Five historical same-device IL2CPP launches reduced the synthetic **amortized component-P95 score by 66.11%-74.81%** versus tuned AoS.

RELEVANT EXPERIENCE

IMMRSIV

Jun 2026-Present

Engineer Intern, Simulation Software and Digital Twin | Singapore

- Develop asynchronous loading, shared cache/upload budgets and multi-camera sensor paths, with GPU culling, indirect rendering and repeatable validation.

TECHNICAL SKILLS

Graphics: HLSL, D3D12, compute shaders, GPU profiling, Unity, RenderDoc, PSO warmup

Engineering: C#, Python, Burst, IL2CPP, data layouts, benchmark design, Git, CI

EDUCATION

National University of Singapore

Expected Dec 2026

M.Sc. Biomedical Engineering

Shanghai Jiao Tong University

Sep 2020-Jun 2024

B.Sc. Bioinformatics; Minor in Applied Psychology

Languages: Mandarin (native); English (professional; IELTS 7.5)