Nader Hegazy

Senior Software Engineer (3D & Tools)

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Professional Summary

Senior Software Engineer with **11+ years of experience** specializing in **C++, Real-Time 3D Engine Architecture, and Tools Development**. Delivered high-performance features for industry leaders like **Epic Games** (Twinmotion) and **Adidas** (via 4D Pipeline). Expert in architecting robust 3D applications and content pipelines using **Unreal Engine** and **Unity**. Dedicated to solving complex rendering bottlenecks and building scalable, high-performance tools that empower technical artists and creators.

Professional Experience

Epic Games (via 4D Pipeline) | Senior Software Engineer (Twinmotion)

Jan 2023 – Mar 2026 (3.25 Years)

- **Engine Migration & Profiling:** Resolved critical engine regressions across 5 major Unreal Engine version upgrades (UE 5.1 to 5.6). Utilized Unreal Insight and RenderDoc to identify regressions and fix VRAM and shadow bottlenecks, rescuing unplayable scenes and restoring them to fluid, workable framerates.
- **Apple Silicon Native Support:** Engineered the Mac Arm64 packaging pipeline by modifying underlying Twinmotion build scripts, delivering native M1/M2 support and a 20-30% performance increase over Rosetta.
- **Real-Time Telemetry:** Architected a Statistics Monitor (Overview, Textures, Meshes) processing telemetry for heavy scenes, empowering users to identify bottlenecks and replace assets on-the-fly.
- **UI Performance Optimization:** Migrated Material Panel WrapBox to TileView (C++, Slate/UMG), reducing load times for heavy architectural scenes (5,000+ materials) from 15 minutes to ~0.5 seconds while preserving complex interactions.
- **Feature Engineering:** Engineered high-end Cinematic Camera features, including adjustable lag and realistic Focus Hunting effects, alongside a robust Undo/Redo system and Content Migration Wizard.
- **Automated Testing:** Built comprehensive C++ testing suites for scene serialization and Undo/Redo state management, eliminating manual QA overhead and catching regressions pre-deployment.

Adidas (via 4D Pipeline) | Senior Software Engineer (Main Developer)

Jun 2021 – Dec 2022 (1.5 Years)

- **Adidas CLO Plugin:** Consolidated legacy tools into a unified, high-performance asset library (C++, Qt, CLO-SDK), enabling hundreds of global designers to seamlessly drag-and-drop assets within their 3D environment.
- **Cloud Architecture:** Architected and migrated the central 3D asset database to a scalable AWS Serverless backend (Python, Lambda, Step Functions, Event Bridge, S3), successfully supporting tens of thousands of digital garments across global "Digital Creation" hubs.
- **Pipeline Automation:** Engineered a custom Unreal Engine Alembic Importer Plugin that automated high-fidelity asset imports. Reduced material and texture assignment overhead **from ~15 minutes per file down to a single click** with batch import capabilities, dramatically accelerating pipeline throughput.
- **Data Synchronization:** Built a specialized Smartsheet API Tool for automated asset data synchronization using JSON-templated CSV generation.

Instinct Games | Senior Software Engineer (Steel Rising)

Dec 2017 – May 2021 (3.5 Years)

- **Game Architecture:** Developed core gameplay and networked systems for a 60-level sci-fi multiplayer survival game, driving technical execution within a lean, cross-functional team of 15.
- **Networked Physics:** Engineered a physics-driven, rideable hoverbike from scratch. Ported foundational logic from Unity to UE4 and optimized network replication to ensure smooth, synchronized physics between the rider and observing clients.
- **Complex Tooling:** Architected a mission-critical CSV Item Generation Tool. Enabled the design team to generate and balance over 100 variations per asset (robots, weapons, materials) using complex reference tables, completely unblocking the game's level design workflow.
- **Engine Modifications:** Performed deep, engine-level C++ modifications to UE4 source code to resolve critical bugs and add features, successfully leading the migration of a highly customized engine build to newer releases.

ADabisc Future Qatar | Software Engineer

Dec 2016 – Jul 2017 (8 Months)

- Developed a real-time face tracking prototype using an Intel RealSense camera and dlib to map facial markers to 3D character blend shapes.
- Engineered a Unity-based drawing application utilizing custom C++ native plugins for performance-critical fill algorithms.

Al-Kottab | Game Developer

Jan 2015 – Dec 2016 (2 Years)

- Rapidly prototyped and delivered AR/VR experiences, including a VR multiplayer racing game with custom driving AI and collision avoidance.
- Successfully advocated for and led the studio's transition to Unreal Engine 4 for high-fidelity VR development.

Technical Skills

- **Languages:** C++, Python, C#, SQL, Kotlin, JavaScript, Java, Lua.
- **Engines & Frameworks:** Unreal Engine 4/5 (Core, Rendering, Slate/UMG), Unity, Qt, Jetpack Compose, Clo-SDK, .NET, Vulkan, OpenGL.
- **Tools & DevOps:** Perforce, Git, SVN, CMake, Premake, Jenkins, Jira, RenderDoc, Unreal Insight, Linux, Custom Toolchains.
- **Specializations:** Performance Optimization, Plugin Architecture, Cross-Platform 3D Architecture, UI/UX for Tools, Computer Graphics (PBR, Shaders), VR/AR (Vuforia, Oculus Rift).
- **Cloud & Backend:** AWS (Lambda, Step Functions, Event Bridge, S3), Node.js.

Education

- **B.S. in Computer Engineering**, Ain Shams University, Egypt.