

Education

IIT Roorkee

B. Tech. Production and Industrial Engineering

- CGPA: 6.53/10

Roorkee, UK

Nov 2021 – May 2025

Experience

XR Developer

CogXR Labs

- Developed various client-specific apps including a Car Configurator with an intuitive UI in UE5
- Implemented adjustable car distance using a slider and a screenshot button, built in UE 5.1
- Created a Metahuman project integrating Azure Cognitive API for Text to Speech functionality
- Worked on Unreal Engine apps with a 4-person team, each handling distinct platforms

Jan – April 2023

Remote, Internship

Graphics Programmer

CrossGL

- CrossGL was developing a compiler for a custom shader language that compiles to cross platform IR
- Contributed to Vulkan backend for a modern C++ graphics-agnostic engine demo for the custom shader language
- Gained expertise with Visual Studio debugger, call stack, variable watching, memory layout, and low-level architecture

Aug – Sep 2024

Remote, Internship

Projects

Cravillac: Vulkan Renderer | C++, Lua, CMake, Vulkan, Slang

- Vulkan based cross platform (Windows/Linux) renderer, utilizing modern graphical techniques
- Utilized modern Vulkan features like dynamic rendering, BDA, descriptor indexing
- Integrated GLTF model loading to import and render complex 3D assets
- A simple resource manager-based architecture, providing PSO, Descriptor Set Layout caching
- Implemented 6-DOF first-person camera system with mouse/keyboard input handling
- WIP render graph for managing render passes for an optimized forward renderer

Feb 2025 –

Luma: D3D12 Renderer | C++, Lua, CMake, D3D12, HLSL

- Built high-performance D3D12 renderer using modern C++ 17/20 features
- Implemented advanced D3D12 features including Resizable BAR and bindless textures for efficient GPU memory access
- Developed GLTF 2.0 model loader with PBR material support and optimised vertex/index buffers
- Added Ray traced lights and shadows using DXR 1.1 Inline Ray tracing along with a galaxy shader compute pass

August 2025 –

Spar: D3D11 Renderer | C++, Lua, CMake, DX11, HLSL

- A DX11 based graphical engine for showcase.
- Integrated ImGui for real-time shader, lighting, and texture adjustments, enabling interactive scene customization.
- Implemented Blinn-Phong shading with glTF model loading, supporting normal, diffuse, emission, and specular maps
- Developed a complex scene with dynamic lighting, advanced materials, and interactive rendering parameter control

Nov 2024 – Jan 2025

Lucid Pixel : OpenGL Renderer | C++, Lua, CMake, OpenGL, GLSL

- Developed a C++ 14 based OpenGL renderer for learning with a working viewport, and testing playground
- Implemented a Phong shading model featuring ambient, diffuse, and specular components for lighting
- Incorporated material properties and lighting maps to showcase various light interaction effects effectively
- Learned about build systems and Linux architecture while integrating Dear ImGui and Assimp model loader

April 2023 – Jun 2023

Paraller Tracer | C++, Bash

- Developed a C++ ray tracer to render shapes, materials, output PPM images with 24-bit color and alpha compositing
- Designed an adjustable camera model with control over field of view, depth of field, and integrated anti-aliasing
- Built a scene manager for rendering multiple objects, basic shadows, and ported the project to Rust for memory safety

May – June 2023

Polygon Collider Visualizer | JavaScript, Node JS

- Implemented a polygon collider visualizer using the GJK algorithm for real-time collision detection
- Used Three.js lib to create a ground plane and place shapes, enabling dynamic collision checking
- Optimized the algorithm to run every frame, ensuring accurate and continuous collision feedback

April – May 2023

Skills

Languages: C/C++, Rust, C sharp, JavaScript, HTML/CSS

Human Languages: English, Hindi

Developer Tools: Visual Studio, RenderDoc, NSight Systems, PIX Git, CMake, Xmake, VS Code