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Ishansh Lal

Computer Graphics Engineer

Summary:

As a passionate and dedicated C++ Graphics Programmer, I excel in delivering high-quality, outcome-oriented solutions by focusing on the process and maintaining a positive attitude. My strong problem-solving and superb debugging skills, coupled with patience and adaptability, enable me to tackle complex challenges. Committed to writing clean and maintainable code, I take responsibility for my work and continuously strive for self-improvement.

Education:

- Bachelor of Technology in Computer Science and Engineering.
  Jaypee Institute of Information Technology, NOIDA, India

Languages:

- English (Fluent)
- Hindi (Native)

Technologies:

C++23	CMake	x86_64 Assembly
Python	Bash	PowerShell
Golang	Antlr4	C#-Scripting
Vulkan	OpenGL	DirectX 12

Tools and softwares:

Unity	Unreal Engine	Blender
git	perforce	vcpkg

Technical Skills:

- Rendering/Graphics Pipeline
- CPU, GPU Architecture
- Engine Architecture and Optimization
- Acceleration Data Structures
- 3D & Vector Mathematics
- GPGPU Programming
- Procedural Generation
- Ray-Tracing Concepts
- Image processing
- Network Programming
- Android C++ Native
- Cross Platform Development
- Automation Pipelines
- Prompt Engineering

Award(s):

- Won µCR, Microcontroller based System & Robotics Hub event Eximietas, 2019

Experience:

1. Ubisoft India Studios

- **3D Programmer - On-Site** (Jun 2023 - Present, 1.5 yrs+) \
  - Worked on **AP Monorepo** (of which AC Shadows and all the newer Anvil/ Scimitar games are part of), understanding and documenting various parts of it etc.
  - Worked on **Map related** features of an Unannounced project involving mesh processing, post processing shader etc., optimizing the 2D pipeline for art style of the **Living Map** feature including faster iteration times, terrain rendering, road/rail routes, building silhouettes, vegetation, water, and out of bounds areas etc designing completely different system to handle all that, camera, render passes etc and to automate their generation for artists. Also Optimized multiple aspects of rendering reducing wasted frame-times.
  - Currently deployed on **Skull and Bones** as part of quality pod maintaining graphics systems of the game.

2. Viga Entertainment Studio

- **Graphics Engineer - Remote** (Feb 2023 - May 2023, 4 mos) Conversion of video with depth data to 3D mesh/point-cloud for “volumetric streaming” between individuals using ZED cameras (to be deployed in ScanStage).
- **Graphics Engineer - Remote** (June 2022 - Aug 2022, 2+ mos) Documenting products, their maintainence, improving/speeding-up sections of various programs i’ve previously worked upon inside ScanStage such as Face Capture etc.
- **Graphics Engineer Intern** (Oct 2021 - Apr 2022, 7 mos)
  - Mesh refinement: Optimizing No. of vertices in captured mesh then adding lost details using mean curvature. Multi-threading, real-time editable and disk caching.
  - Camera calibration Intrinsic-Extrinsic parameter estimation of cameras for face reconstruction with AprilTags.(Python)
  - Deploying scalable build systems CI/CD Ready, single step, cross platform build process with CMake, VcPkg, QT-5,6 support including a custom file-patcher for libraries and automatic dependenciesresolution from servers.
  - Project architecting Planned architecture for “Scan Stage” and was praised for the same
  - Wand calibration for Motion capturing on synthetic dataset.

Personal Projects:

- **SETU Game Engine** (**major** project): Cross platform (windows, Linux, Android), Cross API (OpenGL 4, GLES 3, DirectX 12), Modular. (C++, GLFW, Android Native, CMake)
- **RayTracing-Tests** (**GPGPU-Accelerated**) & OpenGL-TestSite: Framework for rapid prototyping of OpenGL, most notably used for GPU compute implementation of all 3 Peter Sherley’s raytracing books.
- **Particle Swarm Optimization algorithm Visualizer**: GUI, MSDF font rendering from scratch using Vulkan and C++.
- **Bank Management System**: Wrote the GUI (with 3D background) from scratch using OpenGL.
- Scene perception for visually impaired and Live depression detection on Tweets (minor projects): Both Python based Computer Vision + AI/ML projects.
- **NotPing-OnlyPong**: Pong game with raw rasterization graphics, GUI, VFX, SFX, music from scratch using only Win32 and C++.
- Courses: Game Engines(Hazel, Kohi); Procedural terrain Generation in Unity; C# Unity Developer 2D, 3D; Games with go, Go Bootcamp, and many more