



# Ishansh Lal

Graphics engineer - NPR Nerd - HPC enthusiast  
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## EDUCATION

- Jaypee Institute of Information Technology, Sector-62** NOIDA, India  
*Bachelor of Technology - C.S.E* July 2019 - present  
*Courses: Operating System, Data Structures, Analysis Of Algorithms, Artificial Intelligence, Machine Learning, Networking, Databases*

## SKILLS SUMMARY

- **Languages** C/C++, Golang, Python, PowerShell, Bash, C# scripting
- **Technologies** Vulkan, OpenGL, x86\_64-Assembly(AVX,AVX-2)
- **Tools** CLion, Visual Studio, ReSharper, Visual-Assist, Unity, Unreal Engine, Blender, Git, Github, Gitlab, CMake, Premake
- **Soft Technical Skills**
  - Rendering/Graphics Pipeline • CPU Architecture • GPU Architecture • Engine Architecture • Familiarity with acceleration DS (Ex. LBVH) • 3D & Vector Mathematics • GPGPU Programming • Windows Development (& Win32 API) • Procedural Generation • Ray-Tracing Concepts • Image processing • Network Programming • Android C++ Native
- **Platforms** Windows, Linux, Arduino, Raspberry
- **Soft Skills**
  - Patience • Self-Motivation • Problem-Solving • Debugging skills • Positive Attitude • Self-Control • Adaptability

## EXPERIENCE

- Viga Entertainment Technologies** Remote  
*Graphics engineer Intern (Full-time)* Oct 2021 - Apr 2022, 7 mos
  - **Mesh refinement:** Optimizing No. of vertices in captured in mesh then adding lost details using curvature of vertices. *Multi-threaded and cached, real-time editable & custom model format for faster subsequent loading times.*
  - **Camera calibration:** Intrinsic-Extrinsic params estimation of cameras for face reconstruction with AprilTags.(Python)
  - **Deploying scalable build systems:** Added CMake and VcPkg support to projects, for single step, cross platform build process including custom file-patcher for libraries, Qt deployment, resolving dependencies from servers, CICD ready.
  - **Project architecturing:** Planned architecture, foundations for a major project and was praised for the same
  - **Wand calibration for Motion Capturing:** with unreal engine generated synthetic dataset.
- Viga Entertainment Technologies** Remote  
*Graphics engineer (Full-time)* June 2022 - Aug 2022, 2+ mos
  - **General:** Creating Documentation for products, maintainence, improving sections of various programs i've previously worked upon (as part of the Core Team).

## PROJECTS

- **SETU Game-Engine:** Cross-platform (Windows, Linux, Android), Modular engine with C++20, OpenGL (2nd half '22)
- **OpenGL-TestSite:** (inherited-by: NutCracker) Research oriented, open source, OpenGL test framework for rapid prototyping of OpenGL. Tech: C++, Premake, Glad, GLFW, glm, DearImGui, spdlog, stb-image etc. (May-Oct '21)
- **NutCracker (WIP):** ReImagined multiplatform, to support Vulkan, OpenGL, DirectX using C++ modules (May-'Till '22)
- **Particle Swarm Optimization algorithm Visualization:** with interactive GUI rendering from scratch in vulkan (May '22)
- **RayTracing-Tests (GPU-Accel):** Based on Peter Sherley's "Ray-tracing in one weekend" for ideas, modified for GPGPU Programming via OpenGL's Compute Shaders, for real-time performance on iGPU. (Jun-Aug '21)
- **Scene perception for visually impaired (minor):** object recognition, depth estimation and text-to-speech (Apr '22)
- **Depression detection on Tweets: Live (minor):** sentimental analysis, twitter APIv2, GUI, PyTorch (Nov '21)
- **Autocorrect Implimentation GUI (funny name):** Text editor with spell-checker, tabs, resource handling. (May-Aug '21)
- **Bank Mangment System:** a BMS with interactive UI rendering from scratch. (May '20)
- **NotPing OnlyPong:** Pong game with rasterized graphics, GUI, in game tutorials, VFX, SFX, music, ester eggs and more. Tech: C++, Win32. (Nov '20)

## HONORS AND AWARDS

- Won Club µCR Microcontroller Based Systems and Robotics Hub event Eximietas, 2019

## VOLUNTEER EXPERIENCE

- NSS volunteer Oct 2019-20, jiit** NOIDA, India  
*Helped out at NGOs, campaigns in interest of environment, blood donation, food distribution etc.*

## COURSES UNDERTAKEN

Sentimental Analysis on textual data	Game Engines (Hazel, Kohi)	Procedural terrain Generation
C# Unity Developer 2D, 3D	Games with go	Go Bootcamp, and many more