

# Aayush Verma

## Graphics Engineer

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## PROFILE

Graphics Engineer with a strong background in low-level graphics programming and application development. Skilled in leveraging the latest technologies to design and implement efficient software.

## PROFESSIONAL EXPERIENCE

### Graphics Engineer

Jun 2022 – Sep 2023 | Gurugram, India

#### The Gaming Project | India's First Cloud Gaming Platform

- Contributed to the **low-latency streaming** solution, while honing my skills in **C++** by applying **OOP** concepts for debugging and deploying features and optimising the codebase of a **multi-threaded, real-time cloud-based** application.
  - Implemented code involving **network**, **video codecs**, and **rendering** while taking advantage of the **hardware** for lower latencies.
  - Optimized the server-side application for improved video quality and **better performance** by profiling different **video codecs** and encoding settings, decreasing server resources used by **300MBs** on **GPU** memory and **8%** on **RAM**.
- Implemented and deployed **Adaptive Quality** using a **supervised machine-learning** algorithm using **Javascript**.
  - Collected and cleaned a dataset of over **4.4 million** real-world data points to about **1.5 million** data points.
  - Trained the model with an **accuracy** of **89.2%** when tested across 1500 entries. Saved the trained model in a compressed encoded file.
  - This optimized video streaming quality under **variable network conditions**, resulting in an **enhanced UX** and **reduced control latency**.
- Collaborated with **Samsung Research (SRI-D)** and successfully **launched** our cloud gaming application on their **Tizen Smart TVs**.
  - Held a pivotal role in **guiding** development and maintaining **communication** between teams for **consistency** in the development cycle.
  - Contributed to the development efforts while working closely with **Samsung's Quality Assurance team** to improve and debug the app.
  - Delivered a high-quality app which was bound to enhance our app's accessibility to a wider user base exponentially.
- Developed **Android** client app which involved handling datastream, decoding using **Mediacodec** and rendering using **OpenGLES** in **Java**.
- Handled customer support across various channels to resolve issues on the stream, gameplay, payments or any platform-related queries.
- Created media content and Discord server community for customer engagement. Visited college fests and events to market the product.

### Software Engineer

Sep 2019 – Feb 2020 | Ranshofen, Austria

#### AMST-Systemtechnik GmbH.

- Improved font rendering on company's proprietary software by **loading meshes** for different **fonts** and creating font meshes with an application made by using **C++** and **OpenGL**.
- Designed different **aircraft instruments** on company's **designer tool**.
- Developed an **automated testing tool** application that **simulated clicks** with a GUI using Windows Presentation Foundation (**WPF**) and **C#**.
- Increased working efficiency of the department by developing a file-system tool that **populated fields in the documentation** for different products using **C#**.

## EDUCATION

### MSc. High Performance Graphics and Games Engineering University of Leeds

2020 – 2022 | Leeds, United Kingdom

**Relevant Modules:** Geometric Processing, Modelling and Rendering, Artificial Intelligence, Scientific Computing.

### B.Tech Computer Science

#### University of Petroleum and Energy Studies

2015 – 2019 | Dehradun, India

**Relevant Modules:** Object-Oriented Programming, Data Structures and Algorithms, Computer Graphics, Software Engineering and Project Management, Mathematics.

## SKILLS

### Programming/Scripting Languages

C/C++, Python, JavaScript, C#

### Technologies

OpenGL/GLSL, Android, Tizen, Git/Github, CMake, Linux OS

### Keywords

Object Oriented Programming, Pointers, Shaders, Multi-threading, Standard Template Library, Android, Tizen, Server Programs, Video Codecs, Encoding/Decoding Videos, Socket Programming

## CERTIFICATES

- IIM-B: Innovation and Information Technology Management
- IBM: Computer Vision Fundamentals with Watson and OpenCV
- LinkedIn Learning: Learning OpenGL

## PROJECTS

### High-Performance Volumetric Rendering

Jan 2022 – Mar 2022

- Implemented a Direct Volume Renderer using two-pass raycasting with a suitable GUI using DearImGui.
- Studied various techniques involved in volume rendering like texture-based volume rendering and iso-surfaces.
- Achieved stable framerates of 90 fps for a 16 megabytes Bonsai dataset.

### Dagmar Engine (Game Engine)

Feb 2021 – May 2021

- In a team of 4, the objective was to create a Voxel based environment, cross-platform (Windows and Linux) game engine.
- Responsibilities: Coding the resource manager, scripting system, visual effects, and part of the GUI along with respective unit tests.
- Software Development Lifecycle: Iterative Waterfall Model.

### Space Shooter Game

Apr 2020

- A space shooter game developed using Unity engine.
- Keywords: Power-ups, varied difficulty, sprites, scenes, scripts, audio, prefabs, animation.

### Product Review Analysis using Python

Jan 2019 – Apr 2019

- The project is a study on a dictionary-based approach and machine learning approach, using logistic regression and n-grams, for classification and analysis of a dataset on any product and representing analysed data in the form of graphs and word clouds.
- The overall accuracy of the model came out to be 91% when tested over 183 reviews.