

RAHUL KUMAR

Software Engineer — XR & Computer Vision

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Portfolio — Hanumangarh, Rajasthan

SUMMARY

Software Engineer specializing in high-performance computing, computer vision, and immersive XR systems. Experienced in architecting complex software pipelines, from real-time photogrammetry engines using C++ and Python to hardware-optimized VR simulations. Proven ability to bridge advanced mathematics, physics, and low-latency system design to build scalable, interactive applications.

TECHNICAL SKILLS

Languages: C++, C#, Python, Fortran, MATLAB.
Libraries & Frameworks: OpenCV, Open3D, COLMAP, FastAPI, Flask, Unity3D.
Systems & Architecture: High-Performance Computing (HPC), Hardware-Software Integration, Computer Vision Pipelines.
Optimization Tools: Memory Profiling, GPU Profiling, Batching, Occlusion Culling for Mobile/Embedded Processors.

PROFESSIONAL EXPERIENCE

Digital Twin Simulator Intern (XR) – Climmatech 01/2026 – Present
Remote (Mandi, Himachal Pradesh)

- Developing immersive XR digital twin simulations, integrating real-time data pipelines and optimizing high-fidelity 3D assets for low-latency standalone performance.

Freelance Software & XR Developer 12/2025 – Present
Remote

- Engineering high-fidelity simulation systems with physics-based interactions and complex computational shaders, achieving stable 72/90 FPS on standalone hardware.

Software Development Engineering Intern – Glimpse Tech 06/2025 – 07/2025
Remote

- Built a full-stack immersive app integrating OpenCV for real-time computer vision analysis, reducing video feed latency via optimized frame buffer handling.

Research Intern – ACS Lab, IIT Mandi 12/2024 – 02/2025
Mandi, India

- Built a cross-platform drone simulation environment, authoring core algorithmic control logic to process multi-modal physics inputs for realistic flight mechanics.

KEY PROJECTS

Real-Time VR Photogrammetry Engine

- Architected a computer vision pipeline utilizing Open3D and COLMAP to process and generate 3D meshes of real-world objects.
- Engineered a system capable of real-time 3D model generation and direct streaming into a virtual environment for immediate interaction.

Multimodal VR Input & Interaction Framework

- Developed an advanced interface system pushing the limits of user input, bypassing standard controllers in favor of complex hardware sensors.
- Integrated voice command processing and gesture-based recognition alongside physically accurate collision and kinematic responses.

Digital Twin Flood Simulation System

- Processed real-world topographical data to construct precise digital twins for disaster response analysis and training.
- Implemented computational fluid rendering and optimized high-poly geometric assets to run efficiently on mobile processors.

EDUCATION

Bachelor of Technology in Mechanical Engineering 08/2023 – 08/2027
IIT Mandi, India Current CGPA: 7.0

Relevant Coursework: Computer Graphics, Fluid Dynamics, Computational Fluid Dynamics, High-Performance Scientific Computing.

LANGUAGES

English: Proficient (Professional) — **Hindi:** Native — **Japanese:** Elementary — **German:** Elementary