DHRUV RAJVANSH

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EXPERIENCE

Software Engineer | USC Creative Institute of Technology, Los Angeles, CA **July 2025 – December 2026**

- **Geospatial Application Development:** Spearheaded interactive Geospatial visualization platform with Unity, C#, and WebGL, integrating Cesium Heightmaps and deploying geographical data to generate authentic OV1 operational environments.
- **Virtual Human Modernization:** Leads VITA (Virtual Interactive Training Agent) migration from desktop to Meta Quest 3 via C# and Meta All-in-One SDK. Coordinated second user screen development while configures passthrough capabilities, localhost connections for second screen functionality, and room-scale locomotion with ground detection for Virtual human Placing.
- **Dynamic AI System:** Engineered AI personality framework with 3 different dispositions (neutral, angry, soft) for virtual characters. Orchestrated dynamic cutscenes according to character disposition and architected optimized prefab containers for accelerated retrieval of cutscene assets and audio tagging. Reduces virtual human initialization delay.

Software Engineer Intern | IDZ Digital Private Limited, India **January 2024 - July 2024**

- **Rapid Application Prototyping:** Executed the full development lifecycle for 13 interactive mobile applications, optimizing touch input latency and rendering performance on constrained Android hardware
- **Performance Tuning:** Boosted frame rate by 45% and improved responsiveness by deploying Unity memory management strategies, streamlining asset workflows, and reducing CPU bottlenecks through architectural improvements.

Software Engineer Intern | Vyorius Drone Private Limited, India **June 2023 - August 2023**

- **Multiplayer Infrastructure:** Orchestrated and coded robust real-time communication layers with C#, enabling precise state tracking and seamless multi-user synchronization for a low-latency remote operation system across distributed systems.
- **User Experience Enhancement:** Improved and Merged UI elements including lobby panels and score tracking systems. Engineered efficient networking protocols and state synchronization, Reduced network synchronization latency by 40% via state sync protocol.
- **System Integration:** Leveraged Mirror API to synchronize distributed simulation states, establishing instant player instancing, secure authority handling, and reliable remote interaction for scalable multiplayer environments.

ACADEMIC PROJECTS

Directed Research with Professor Scot Easly – C#, Json, Python

- **Data-Driven Framework:** Developed a data-driven UI framework unifying frontend components with backend RESTful APIs, implementing robust validation logic to ensure data integrity across user sessions.
- **Serialization Pipeline:** Designed a high-throughput serialization pipeline using JSON and C#, optimizing data transfer efficiency for real-time analytics and ensuring secure state synchronization across distributed clients.

Weather Simulation Rendering: Unity 3D – C#, C++

- **Physically Based Simulation:** Built a sophisticated weather simulation system from scratch, implementing advanced physically based animation and volumetric rendering techniques for realistic atmospheric effects in Unity.
- **Procedural Graphics:** Partnered with multidisciplinary team of 4 to develop advanced custom shaders for interactive atmospheric simulation in Unity, coordinating mathematical modeling efforts while generating real-time volumetric clouds, animated terrains, and seamless day-night cycles via ray-marching algorithms.
- **Graphics Optimization:** Optimized shader calculations and rendering pipelines to ensure smooth performance, achieving 60+ FPS on mobile devices while maintaining visual quality.

SKILLS

Languages: C++, C#, Python, JavaScript, SQL (MySQL, PostgreSQL), Java
Tools & Technologies: Unity, Unreal Engine 5, Git/GitHub, Perforce, Visual Studio, AWS, Linux/Unix, CI/CD Pipelines, WebGL
Software Engineering: Object-Oriented Design, Multi-threaded Programming, Data Structures & Algorithms, Design Patterns, Memory Management, System Architecture, REST APIs, Agile/Scrum
Graphics & Rendering: OpenGL, Vulkan, DirectX 11/12, HLSL/GLSL, Real-Time Rendering, Shader Programming, 3D Math (Linear Algebra), Physics Simulation

EDUCATION

University of Southern California **Los Angeles, CA, US**
Master of Science, Computer Science – 3.61 / 4 GPA **August 2024 - May 2026**
Courses: Analysis of Algorithm, 3D Graphic and Rendering, Computer Animation and Simulation, Database system, Engine Development

Pandit Deendayal Energy University **Gandhinagar, Gujarat, India**
Bachelor of Technology, Computer Engineering – 3.86 / 4 GPA **June 2020 - April 2024**
Courses: Operating Systems, Software Engineering, Big Data Analytics, Cloud Computing, Web Development, Computer Vision, ML