Danvi Sai Sapthasw Reddy, Simhadri

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EDUCATION

Purdue University — **West Lafayette, Indiana**
M.S. in Computer Graphics Technology: **Key Focus:** Graphics Programming/Game Development, **GPA:** 3.8/4.00 — *Aug 2023 – Dec 2025*

Koneru Lakshmaiah University — **Hyderabad, India**
B.Tech. in Computer Science and Engineering: **Key Focus:** Cyber Security and Blockchain, **GPA:** 9.40/10.00 — *Aug 2019 – May 2023*

SKILLS

PROGRAMMING: C, C++, Python, **OpenGL**, **Graphics Programming**, Scripting (C#, Python), Shader Development (GLSL), CUDA, **3D Rendering Techniques**, **Virtual Reality (VR) Development**, Game Engine Development, Git
DESIGN SKILLS: Gameplay Systems, VR/AR Design, Interactive Systems, Gameplay tuning, Iterative Prototyping, Playtesting, Accessibility Design, Spectator Perspective, Player Empathy, Collaborative Design
SOFTWARES: MS Suite, Adobe After Effects, Photoshop, **Visual Studio, Unity, Unreal Engine**

EXPERIENCE

PURDUE UNIVERSITY — **West Lafayette, Indiana**
Graduate Teaching Assistant & Instructor, Scientific Visualization — *Jan 2025 – Dec 2025*

- Instruct and mentor **70+ students per semester** in scientific visualization, graphics programming, and interactive data storytelling using **ParaView, VTK, D3.js**, **and OpenGL-based pipelines**
- Design and deliver **lectures, labs, and project-based coursework** covering volume rendering, streamlines, glyph-based rendering
- Lead **16+ hands-on labs** using real-world medical, physics, and fluid dynamics datasets (MRI, CFD, atmospheric data)

ASEDA SCIENCES — **West Lafayette, Indiana**
VR Developer Intern — *May 2024 – Aug 2024*

- Refactored Unity(C#) codebase for **Oculus Quest** compatibility, optimizing performance for immersive user experience
- Collaborated with colleagues to deliver pilot code with documentation to allow simple on-boarding of other developers
- Actively tested and evaluated user experience across prototypes to inform **iteration and gameplay balance**
- Authored clear documentation and coding guidelines to onboard new developers, facilitating smooth handoff of the VR project

ICONIC ENGINE — **West Lafayette, Indiana**
VR Developer — *Aug 2023 – Dec 2023*

- Developed a specialized **VR game utilizing Unity3D**, integrating sensory-friendly design elements, spatial organization challenges, and interactive tasks to promote **cognitive engagement and enhance spatial cognition** for **individuals with autism**
- Collaborated with designers and artists in agile **sprints to iterate on gameplay mechanics, integrating feedback** and ensuring smooth UX in VR
- Led the adoption of Git for version control among a team of 5, establishing branch workflows and code review practices to maintain code quality

PROJECTS

Valorant Culturalization & Narrative Analysis Project
Game Researcher & Design Strategist

- Conducted an in-depth study on cultural representation in Valorant, agent voice lines, accents, backstories, and in-game communication triggers
- Evaluated tangible (agent design, attire, map elements) and intangible (localization, colloquialisms) aspects of character design and player experience
- Identified gaps between narrative intent and player engagement and proposed story-driven game mode enhancements
- Developed live service inspired recommendations to improve aesthetic refresh cycles and narrative relevance

Advanced Lighting Models
Developer

- Implemented advanced lighting models (Ashikhmin-Shirley BRDF, Cook-Torrance, Strauss, and Lommel-Seeliger) **in C++ using OpenGL and GLSL shaders,** Integrated models into a **custom rendering pipeline**, testing visual fidelity and frame rates

Visual Synthesis
Developer

- Built a **GPU-accelerated post-processing pipeline** implementing real-time **edge detection, blur, vignette, glitch, and gamma correction effects** using OpenGL and GLSL shaders
- Designed a **multi-pass screen-space rendering pipeline** for non-photorealistic and analytical visualization of complex 3D models
- Implemented **interactive debug UI** enabling real-time parameter tuning (edge thresholds, view angles, scale, and effect blending) for live shader experimentation
- Engineered a modular shader framework allowing dynamic switching between post-processing effects

Particle Simulation
Developer

- Built a **fully GPU-driven particle simulation engine** using **OpenGL Transform Feedback**, particle updates and real-time simulation
- Designed shader-based particle dynamics including **time-based evolution, and parameterized force controls**
- Developed an **interactive uniform control and debug UI** for live tuning of particle color, size, transform matrices, and simulation parameters
- Achieved **200+ FPS sustained real-time performance** through CPU–GPU decoupling and efficient buffer streaming

Game Engine
Developer

- Built a modular game engine from scratch in C++ and OpenGL. Implemented rendering pipeline, entity-component system, input handling, and a basic physics/collision system
- *Developed engine features such as A** pathfinding for AI, BSP tree partitioning for rendering optimization, and an in-engine level editor with debug overlays

PUBLICATION

Current Research Focus: Designing a pipeline that leverages **Signed Distance Fields (SDFs)** and **diffusion-based generative models** to synthesize high-quality 3D meshes of buildings, streets, and terrain from 2D map inputs and silhouette images