

ELANTHIRAYAN MADHAVAN

Senior AI & Full Stack Engineer

+91 8147142099

imelanthirayan@gmail.com

 <https://www.linkedin.com/in/elanthirayan>

 <https://elanthirayan.medium.com>  <http://imelanthirayan.github.io> </> <https://github.com/imelanthirayan>

PROFESSIONAL SUMMARY

Senior AI & Full Stack Engineer with 11+ years of experience delivering AI-powered applications, Digital Twin platforms, XR solutions, and cloud-native systems. Expertise in Generative AI, RAG, Azure OpenAI, OpenUSD, Spatial Computing, and enterprise software architecture. Strong technical proficiency in Python, TypeScript, JavaScript, React, Next.js, FastAPI, Azure, and Generative AI technologies. Experienced in building AI assistants, Retrieval-Augmented Generation (RAG) applications, vector search solutions, and scalable web applications. Proven ability to rapidly learn emerging technologies, develop innovative solutions, and deliver high-quality software across diverse business domains.

EDUCATION

M.Tech in Data Science and Machine Learning | 2020 - 2022

PES UNIVERSITY

Master of Computer Applications | 2016 - 2018

ANNAMALAI UNIVERSITY

WORK EXPERIENCE

Shell India Markets Pvt Ltd | 2018 - Present

Engagement History:

L&T Technology Services (2018–2023), Randstad India Pvt Ltd (2023–2025), Shell India Markets Pvt Ltd – Direct Employee (2025–Present)

Innovation Analyst (AI, XR & Digital Twin Platforms)

- Built a RAG-based patent search platform using Python, FastAPI, Azure OpenAI, Vector Databases, and Next.js chatbot interface. Deployed and scaled the solution on HPC infrastructure.
- Integrated Azure OpenAI services, including Azure OpenAI large language models and embedding models, into internal applications to support document processing, semantic search, and conversational AI workflows.
- Managed Azure cloud infrastructure across multiple environments, including App Services, Azure Functions, Key Vault, and Storage Accounts, while overseeing CI/CD pipelines, monitoring, and operational support.
- Spearheaded the organisation's adoption of OpenUSD, establishing a common 3D asset standard to improve interoperability across XR, simulation, and digital twin initiatives.
- Built Omniverse-based simulations that integrate live operational data into OpenUSD-powered 3D environments, serving both as real-time digital twins and structured 3D asset repositories.
- Developed a spatial computing application for Apple Vision Pro using Unity and SwiftUI, enabling real-time monitoring of alerts generated from digital twin data streams.
- Created a visualisation platform that transforms 2D operational datasets into interactive 3D spatial environments, improving situational awareness by 72%. Led delivery across multiple concurrent projects, working closely with external vendors and technology partners to coordinate integrations, manage timelines, and ensure successful technical handovers.
- Developed a proof of concept that combined machine vision, generative AI, and XR, allowing users to create 3D models through voice commands from within a VR environment.

Full-Stack Developer - XR Specialist

- Developed VR training modules in Unity for automotive and semiconductor assembly/disassembly processes, reducing training time by 65% compared to conventional training methods.
- Built immersive ADAS simulations in VR that allowed engineers to interact with, configure, and evaluate systems from multiple perspectives, improving technical understanding by 40%.
- Designed and implemented REST APIs to connect VR and AR applications with backend systems, enabling reliable data exchange and real-time state synchronisation.
- Developed web-based administration portals for managing XR content, monitoring user activity, and generating training reports for business stakeholders.

Axinovate Technologies LLP | 2015-2017

Full-Stack Developer

- Developed full-stack features for the Skilladda and Xucore e-learning platforms, spanning frontend interfaces, backend services, and database integration. Contributed 3D gamification features that enhanced learner engagement and user experience.
- Served as the sole developer of a real-time event management platform featuring a multiplayer quiz system built with Node.js, WebRTC, and MySQL. Packaged the application for iOS and Android using Apache Cordova and deployed it at NVIDIA Gamer Connect events across Asia, achieving 95% attendee participation.
- Managed application hosting and cloud infrastructure on Microsoft Azure, utilising App Service for web application deployment and Blob Storage for media and content delivery.

SKILLS

- AI/ML: OpenAI, Azure OpenAI, RAG, Vector Databases, Prompt Engineering, AI Agents
- Cloud & DevOps: Microsoft Azure, Storage, Docker, Azure App Services
- Languages: Python, C#, JavaScript, SQL
- Backend: FastAPI, Node.js, PHP
- Frontend: React, Next.js, HTML, CSS, Bootstrap, TailwindCSS
- Emerging Technologies: Unity3D, OpenUSD, XR/Spatial Computing, Digital Twins

OPEN SOURCE CONTRIBUTION

- [ChatUI](#) - Configurable Open-source AI chat platform supporting multiple LLM providers.
- [MilvusLite Kit](#) - Lightweight toolkit simplifying vector database integration.
- [FileTracker](#) - File monitoring and tracking utility for automated RAG workflows.
- [FolderWatcher](#) - Built an event-driven filesystem monitoring framework in Python for RAG indexing.

PUBLICATIONS

- Published 8 internal technical papers on CloudXR, OpenUSD, Motive.io, Digital Twins, and XR technologies.
- Published a research paper on Reinforcement Learning for Robotic Simulation with IIM Bangalore.