Viresh Duvvuri

Seattle, WA | +1-509-964-5469 | vireshduvvuri@gmail.com | linkedin.com/in/viresh-duvvuri

AI Engineer with 7+ years of experience developing multi-modal agents for enterprise applications. Specialized in MLOps and building intelligent systems, from training TensorFlow/Keras models for object detection to deploying scalable RAG architectures on AWS. Proven track record of engineering data pipelines that detect anomalies and optimize complex workflows by 70%.

Skills

AI/ML Frameworks: TensorFlow, Keras, Object Detection, Anomaly Detection, Agentic AI, NLP, Microsoft Copilot Studio, LangChain, Multi-Agent Systems, RAG, MCP, AWS Bedrock, SageMaker, MLOps, Fine-tuning, LoRA, GenAI, FAISS, PyTorch, Scikit-learn, Vector Search

Data & Analytics: Data Science, Data Pipelines, ETL, Data Processing, Enterprise Systems, Knowledge Graph, Operational Efficiency, Data Integration

Cloud & Infrastructure: AWS, Azure, Docker, Kubernetes, CI/CD, API Design, Deployment, Monitoring, Scalability

Programming: Python, C++, SQL, FastAPI, Flask, React, JavaScript, TypeScript, NumPy, Pandas

Work Experience

Grid CoOperator — Seattle, WA
AI Engineer — *Mar 2025 - Present*

- Developed AI-enabled data processing system using LangChain, Python, and SQL databases from concept to deployment, reducing analyst research workflows by 70% within 2 months through intelligent query generation
- Built scalable backend service with API architecture handling 50-100 daily queries, ensuring reliable performance for real-time smart grid data analysis and operational decision support
- Implemented automated report generation pipeline accelerating stakeholder deliverables by 60% within first quarter, eliminating manual documentation processes for utility operations

Freefly Systems — Woodinville, WA
Senior Software Engineer — *Nov 2021 - Oct 2025*

- Built AI-powered diagnostic tool for drone log analysis, fine-tuning small LLM models (Llama 3.2) to optimize query understanding and response generation. Processed flight data to identify system failures, serving 200+ daily users in production
- Built automated systems to process complex technical data and identify system failures, developing knowledge base enhancements and support tools that streamlined operations
- Contributed to drone platform codebases implementing new features and optimizations for flight control systems and payload integration across multiple product lines, managed software integration projects from planning through release
- Led release management for drone platforms overseeing testing phases from alpha through production deployment, coordinating firmware updates and executing comprehensive testing protocols with cross-functional teams

Lumenier — Sarasota, FL
Drone Software Developer — *Jul 2020 - Oct 2021*

- Trained and deployed AI models for object detection and wrote embedded C++ code to integrate LiDAR/optical flow sensors, enabling robust obstacle avoidance and position holding in GPS-denied environments
- Collaborated with open-source flight control software maintainers for integration, testing, and deployment of autonomous flight algorithms, prototyped innovative features like toss-to-launch for product roadmap development

York Exponential — York, PA
Software Engineer - R&D — *Aug 2018 - May 2020*

- Developed prototype software for in-house autonomous surveillance mobile robots using ROS2, SLAM, and computer vision technologies
- Built Human Machine Interface for Universal Robot welding applications using Python and Kivy framework, implemented multi-robot control systems with platform independence

Education

Washington State University — Pullman, WA
Master of Science Computer Science — *Jan 2015 - Jan 2017*

GITAM University — Visakhapatnam, India
Bachelor of Technology Information Technology — *Jan 2011 - Jan 2015*

Projects

GridCOP: Smart Grid Analytics Agent

- Problem: Power grid analysts needed automated database querying and intelligent insights to understand complex data patterns beyond basic visualizations
- Solution: Developed A2A multi-agent system using LangChain orchestration and MCP where specialized agents coordinate tasks, implemented RAG with vector search (FAISS), monitored agent decision quality using LangSmith tracing and deepeval for retrieval assessment achieving 0.85+ context precision, built data pipeline to collect and annotate 500+ user queries for continuous model refinement, deployed on AWS with observability
- Impact: Enhanced analyst productivity by 70% through AI co-pilot that augments domain experts with automated workflows, implemented human-in-the-loop (HIL) evaluation and testing pipelines for production-ready AI systems with robust error handling through rapid iteration

Production System Optimization Tool

- Problem: Manual system analysis taking hours of expert time, creating bottlenecks in product development and customer support resolution
- Solution: Built full-stack anomaly detection application with React frontend and Python Flask backend, integrating foundation models (Ollama, Llama 3.2) to process drone telemetry data and identify system failures, implementing automated pattern recognition algorithms
- Impact: Transformed expert analysis from hours to minutes, deployed to production serving 200+ daily queries with significant performance improvements through rapid iteration and continuous optimization

Autonomous Obstacle Avoidance System

- Problem: Drone platforms required robust safety mechanisms to detect and avoid obstacles in real-time during autonomous flight missions
- Solution: Trained and deployed TensorFlow/Keras object detection models on embedded edge devices, tuning control algorithms based on computer vision inputs to execute evasive maneuvers with low latency
- Impact: Delivered a critical safety feature for autonomous flight systems, enabling safe operation in complex environments and reducing collision risks by significant margins