Duvarakanath Senthilkumar

+1 585-776-0161 | duvarak05@gmail.com | linkedin.com/in/duvarakanath-senthilkumar | Rochester, New York

Summary

AI Engineer (M.S. in AI) who turns enterprise data and applied research into deployed, intelligent systems. Unified a university's platform and AI infrastructure through custom automation, delivering measurable cost savings. As a graduate researcher, engineered high-accuracy classification models for physics experiments. Experienced in designing autonomous AI agent workflows and enterprise integrations that bridge business platforms with intelligent automation.

Education

Master of Science in Artificial Intelligence — Aug. 2025 – May 2027
Rochester Institute of Technology *CGPA: 3.9* — *Rochester, NY*

Bachelor of Technology in Artificial Intelligence — Jan. 2021 – Jan. 2025
Amrita Vishwa Vidyapeetham *CGPA: 8.65* — *Bangalore, India*

Professional Experience

Graduate AI Software Developer, University Advancement — Jan. 2026 – Present
Rochester Institute of Technology — *Rochester, NY*

- Developed and maintained Salesforce integrations as a Salesforce CLI (SFDX) developer, building Apex logic, flows, and REST/Bulk API connectors to sync enterprise data with Azure AI Foundry for complex Agentic AI workflows
- Optimized custom agent logic using Azure AI Search and Azure OpenAI to eliminate costly AI subscriptions, driving 30–40% budget savings while maintaining contextual relevance
- Streamlined the deep learning model lifecycle with Docker containerization and high-availability orchestration on Azure Kubernetes Service (AKS)

Research Assistant — May 2026 – Present
Rochester Institute of Technology — Department of Physics — *Rochester, NY*

- Designed three deep learning architectures (VortexNet, AlexNet, ResNet) in PyTorch to classify Orbital Angular Momentum (OAM) beams from speckle interference patterns (up to 99.9% accuracy, 10 classes); built VortexNet, a custom CNN with an Angular Fourier Transform core for rotation-invariant OAM-mode discrimination
- Curated traditional and novel ST-OAM spectral-tilt datasets and built an information-loss pipeline (SSIM, PSNR, cosine similarity, L2), showing OAM topological phase survives scattering better than raw pixels, with errors clustering on opposite-sign orders

Projects

Quantum-Driven Big Data Processing | *Quantum Machine Learning, Big Data, Python*

- Constructed and deployed a Quantum ML (VQC) architecture for big-data processing, 30% more efficient than classic ML (SVC), validating scalability and practical applicability

Compiler Optimization: A Deep Learning and Transformer-Based Approach | *Transformers, CodeBERTa, Mistral*

- Built a multi-modal transformer framework (CodeBERTa for natural-language understanding, Mistral for syntactic/semantic code analysis) to detect compiler optimizations, reaching up to 99% code efficiency
- Fine-tuned across 14 optimization techniques, lifting percentage gains from 0.7% to 99.9%

Patient Data Phenotyping with Fine-Tuned Language Models | *NLP, Transformers, MIMIC-III*

- Classified medical conditions from clinical narratives via NLP, benchmarking ML (Logistic Regression, Naive Bayes, Random Forest, XGBoost), DL (CNN, MLP), and fine-tuned transformers (BERT, DistilBERT, RoBERTa)
- Added n-shot learning and prompting with Flan-T5; evaluated on 10 phenotyping tasks over 1,610 MIMIC-III summaries

Publications

Quantum-Driven Big Data Processing | *IEEE* — May 2024

Test Case Generation using Graph-based Deep Learning Methods | *IEEE* — June 2025

LLM-Driven Smart Test Case Generation for Scalable Software Testing | *IEEE* — Oct. 2025

Deep Learning-Assisted Recognition of Space-Time Wave Packets Carrying Orbital Angular Momentum in Scattering Media | *OPTICA* — Sep. 2026

Technical Skills

Languages: Python, Java , SQL, Apex
AI/ML: LLMs, Agentic AI, RAG, Deep Learning , Neural Network , NLP, PyTorch , CI/CD Pipelines
Salesforce & Cloud: Salesforce CLI (SFDX), Azure AI Foundry, AWS, Docker & Kubernetes
Soft Skills: Client-Facing Solutioning, Cross-Functional Collaboration, Problem-Solving