NISHANT HEGDE

Rochester, New York | +1 (585)-559-7746 | nhegde2@ur.rochester.edu | LinkedIn | GitHub | Portfolio

EDUCATION

MS in Data Science, University of Rochester — Aug 2024 to Dec 2025

B.E. in Electronics and Communication, KLE Technological University — Aug 2016 to Jun 2020

WORK EXPERIENCE

Data Science Intern | EagleHawk One, Inc — **Jun 2025 to Present**

Remote

- Engineered 3 minimum viable product (MVP) deep learning solutions for the company's AI platform, spanning object detection, instance segmentation, and retrieval-augmented generation applications.
- Designed a modular computer vision pipeline for real-time streetlight tracking in low-light nighttime drone imagery using an ensemble of YOLOv8 detectors, processing 5000+ images with 91% detection accuracy.
- Built a rooftop thermal leak detection pipeline using Mask R-CNN instance segmentation on aerial FLIR imagery, implementing end-to-end AWS ML infrastructure (S3, SageMaker, MTurk) with transfer learning for multi-class detection.
- Developed an offline RAG system for gas accident emergency response training using hybrid retrieval with Docling multimodal parsing and Ollama LLM, achieving a 70% reduction in training time through automated competency assessments.
- Created and presented data visualizations using Python (Seaborn, Numpy, Matplotlib, Pandas) to convey insights to non-technical cross function team members to align product goals with business priorities.

Machine Learning Intern | Laboratory for Laser Energetics — **Aug 2025 to Dec 2025**

Rochester, New York

- Applied Deep Neural Networks to model laser physics, predicting beam behavior through the OMEGA EP laser amplification system to advance scientific understanding of high-energy laser systems.
- Designed a U-Shaped Fourier Neural Operator to jointly predict spatial beam profiles and temporal pulse shapes, achieving 1% prediction error and 1.57% energy error across spatiotemporal domains.
- Developed a 3D Attention Recurrent Residual U-Net with attention-gated skip connections to capture spatio-temporal laser dynamics through symmetric encoder-decoder architecture with recurrent convolutions.
- Engineered HPC training infrastructure with model parallelism, mixed-precision training, and gradient checkpointing across A100/H100 clusters, reducing training time by 40% and VRAM usage by 30%.

Software Engineer | Toshiba (KIOXIA America, Inc) — **Aug 2020 to May 2024**

Remote

- Designed and validated firmware for enterprise NVMe SSDs to ensure reliability and performance in data center applications.
- Designed regression, stress testing, and failure analysis test suites in Java that improved firmware stability by 15%.
- Orchestrated the deployment of high-quality firmware modules by using Scrum and Agile methodologies.
- Automated pipelines with Jenkins, enabling seamless nightly builds causing a 20% reduction in manual QA effort.
- Streamlined collaboration through Confluence, improving documentation transparency and workflow efficiency by 33%.
- Built internal debugging and telemetry analysis tools in Python to streamline firmware failure root-cause analysis.
- Improved reliability of long-running endurance tests by adding fault-tolerant logging and auto-recovery in Java.

PROJECTS

NVMe RAG System [view project] - Developed a retrieval-augmented generation system for querying NVMe technical specifications, achieving 40% reduction in manual search time. Implemented semantic chunking and cross-encoder reranking via LangChain and FastAPI for scalable querying of technical standards.

Wafer Map Failure Pattern Detection [view project] - Built a Vision Transformer defect classification pipeline achieving 96.2% accuracy on 170K samples across 9 defect modes. Developed comprehensive analytics with 40+ visualizations including PCA/t-SNE clustering and radial defect profiles for manufacturing.

Social Media Intelligence Engine [view project] - Created a streaming analytics platform processing 40K+ JSON files via medallion architecture on Databricks. Implemented end-to-end ETL with automated sentiment scoring and real-time monitoring using MLflow model registry.

TECHNICAL SKILLS

Machine Learning:	Neural Operator, U-Net, RNNs, Embeddings, Classical ML
Computer Vision:	RCNNs, GaNs, CNNs, Image Enhancement, Anomaly Detection, Semantic Segmentation
Languages and Databases:	Python, R, C++, MATLAB, Java, SQL, MongoDB, Postgres, Bash
Tools and Libraries:	PyTorch, TensorFlow, Apache Spark, Databricks, Tableau, Scikit-Learn, NLTK, CUDA
Cloud and DevOps:	Heroku, Docker, Kubernetes, MLflow, Delta Lake
Other Tools and Services:	JIRA, Confluence, Workday, LaTeX, MS Office, Slack, Git