

NIRUPAMA BALASUBRAMANIAN

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EDUCATION

University of Massachusetts Amherst

Master of Science, Computer Science, GPA: 4/4

Aug 2025 – May 2027

Massachusetts, USA

- Relevant Coursework: Advanced NLP, Systems for Data Science, Optimization in CS

Vellore Institute of Technology

Bachelor of Technology, Computer Science, GPA: 4/4

Sep 2021 – Aug 2025

Chennai, India

SKILLS

Programming Languages: Python, C, C++, Java, SQL, R, HTML, CSS

Technology and Frameworks: TensorFlow, Pytorch, Spark, Hadoop, Power BI, Tableau, Agile, Git, CI/CD

Certifications: AWS Certified (**Cloud Practitioner**)(**Solution Architect**)

PROFESSIONAL EXPERIENCE

Ascend Cargo Systems (Pre-seed AI Startup)

Jan 2026 - Present

AI/ML Engineer Intern

San Francisco, USA

- Engineered an Autonomous AI Agent using Python, Java Spring Boot, and MCP to orchestrate LLM-driven graph reconstructions and shipment rate refreshes, targeting a **70%** reduction in manual supply chain lookups

Cogniverse Labs

Jan 2025 - Jul 2025

Software AI Engineer

Bangalore, India

- Developed and fine-tuned Faster R-CNN and YOLOv8 object detection models for India's Smart City roadside monitoring initiative, reducing manual inspection workload by **40%**
- Built a computer vision inference pipeline for batch and real-time workloads, deploying models using TorchServe for scalable serving

National University of Singapore (NUS)

Dec 2023 – Jul 2024

Machine Learning Intern

Singapore, Singapore

- Developed a medical CV pipeline using Vision Transformer and TypeScript; analysed real-time inference via Flask REST API to achieve **96%** accuracy through research-led fine-tuning.
- Architected a microservice to deploy an SVM-based predictive engine for a Tier-2 Singaporean Telecom provider; optimized high-dimensional feature sets to achieve **92%** accuracy while leading a 45-member technical cohort.

Colt Technology Services

Aug 2023 - Sep 2023

Data Science Intern

Bangalore, India

- Automated sentiment extraction from employee feedback, by designing and training a BERT-based transformer model with end-to-end NLP pipelines, reducing manual analysis effort and achieving **90%** model accuracy

PROJECTS

IQA Assessment of LDCT Images 📄📄 *Deep Learning, Image Processing, Image Enhancement*

- Authored a Diagnosis based Image Quality Assessment and enhancement technique for Low Dose CT Scans leveraging feature extraction and spatial enhancement methodology
- The SVR-GS model achieved a **0.969** PLCC, with enhancements verified by Dr.Inthulan Thiraviraj

Multilingual Online Polarization Detection 📄📄 *PyTorch, XLM-R, NLLB-200*

- Architected an XLM-RoBERTa framework across 9 languages using NLLB-200 for translation-based oversampling to resolve manifold collapse and increase **Macro F1** from **0.63** to **0.727**
- Integrated Supervised Contrastive Learning and Focal Loss to disentangle overlapping rhetorical labels, achieving **8%** boost through Dynamic Thresholding

Distributed ML Pipeline 📄📄 *ML, Python, TensorFlow, Unity Software*

- Predicted Flight Delays for over 1 million records using Catalyst Optimizer and Lazy Evaluation. Optimized to **0.6535** AUC via Grid Search and validated scalability by benchmarking **PySpark** against Pandas

PUBLICATIONS & ACHIEVEMENTS

📄 Efficient medical diagnosis using ML algorithm: Comparative study on Cataract Detection and Analysis

📄 ANGEL: Automated Navigation Giving Emergency Location - A Robust Tracking System

- **Winner:** Eco-Urban Hackathon - Blockchain solution for solar panel disposal with **95%** accuracy
- **Qualifiers:** HackUMass - Hand Sign Recognition system within to Unity for intuitive user interaction.
- **Qualifiers:** Smart India Hackathon - Devised a VGG model with **91%** accuracy for crowd management