Gopala Krishna Abba

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Professional Summary

Graduate student in Computer Engineering specializing in Machine Learning, Deep Learning, and AI. Skilled in Python, PyTorch, TensorFlow, and MLOps tools with experience in model training, benchmarking, and deployment. Passionate about building scalable AI systems, optimizing ML workflows, and applying cutting-edge research to real-world applications. Strong communicator and fast learner with a collaborative mindset.

Education

New York University **Sept 2024 – May 2026**
Master of Science in Computer Engineering, ***CGPA: 4.0*** *Brooklyn, NY*
Relevant Coursework: Computer System Architecture, Machine Learning, Deep Learning, High-Performance Machine learning, Big Data, Real-Time Embedded Systems

National Institute of Technology, Rourkela **Nov 2020 – May 2024**
Bachelor of Technology in Electronics and Communications Engineering, ***CGPA: 8.03 /10*** *Rourkela, India*

Experience

Bharat Heavy Electricals Limited (B.H.E.L) **May 2023 – Jul 2023**
Graduate Engineering Trainee Intern (Machine Learning & Control System Engineering) *Hyderabad, India*

- Leveraged Python-based analytics to model and optimize the GE SPEEDTRONIC™ Mark VIe system, increasing fuel efficiency by **10%** via ML-driven control algorithms.
- Developed predictive maintenance models for the Auxiliary Pump Module, reducing maintenance costs by **15%** and illustrating data pipeline automation.
- Collaborated with cross-functional teams and gained hands-on exposure to industrial automation and real-time control applications, reinforcing hardware-software co-design concepts.

Projects

Real-Time NYC Subway Traffic Prediction Pipeline
Apache Spark, Kafka, MongoDB, PySpark MLlib, Random Forest, Streaming, SQL, Python **Apr 2025**

- Designed and deployed a full-stack **real-time data pipeline** for MTA turnstile data using **Kafka → Spark Structured Streaming → MongoDB**, processing **50K+ records/minute** with live station-level aggregations.
- Trained and deployed a distributed **Random Forest regression model** in **Spark MLlib** to predict subway station foot traffic, achieving **<5% average prediction error** on high-volume stations (**RMSE ≈ 2700**) with **real-time predictions** integrated into the stream.
- Enabled **dynamic decision-making** by storing predictions and aggregations in **MongoDB**, supporting live dashboards and adaptive scheduling based on peak traffic patterns across **250+ NYC stations**.

Colorectal Cancer Survival Prediction (Full-Stack MLOps)
Python, Scikit-Learn, MLflow, DAGsHub, Kubeflow, Docker, Flask, Minikube, KFP, HTML/CSS **Apr 2025**

- Built a full MLOps pipeline using **167,497 clinical records** with 28 features, modularized preprocessing and achieved **5-key feature reduction** via Chi-squared test, enabling a 82% feature dimensionality drop.
- Trained a **Gradient Boosting Classifier** on top-5 features, achieving **59.9% accuracy** and **ROC-AUC of 0.4996**; logged metrics using **MLflow** and hosted remote experiments via **DAGsHub MLflow UI**.
- Deployed modular training via **Kubeflow Pipelines** on **Minikube**, containerized components with **Docker**, and built a Flask-based UI for clinicians; reduced manual processing time by **60%** through automation.

TorchScript-Optimized Conversational AI Chatbot
Python, PyTorch, TorchScript, Weights & Biases, Seq2Seq, GRU, Attention, GPU Profiling **Mar 2025**

- Developed a GPU-accelerated **Seq2Seq chatbot with Luong attention** using the Cornell Movie Dialogs Corpus, achieved **2.88 training loss** after **4,000 iterations** with real-time inference.
- Performed **automated hyperparameter optimization** using **Weights & Biases**, testing **50 configurations**, where the best run reduced loss by **18.2%**, identifying **gradient clipping (100)** and **Adam optimizer** as key contributors.
- Converted the model to **TorchScript** with a **25% reduction in latency**, enabling deployment-ready execution and achieving a **1.25x speedup** over standard PyTorch inference.

Technical Skills

Programming Languages: Python, C/C++, Java, SQL, JavaScript
MLOps & Model Deployment: MLflow, Data Version Control, DagsHub, Apache Airflow, ONNX, FastAPI, Flask
Cloud & DevOps: Docker, Kubernetes, Azure ML, AWS SageMaker, Microsoft Azure, Azure Cosmos DB, Jenkins
Big Data & Distributed Computing: Apache Spark, Kafka, Hadoop, Hive, MapReduce
ML/DL Frameworks: TensorFlow, Keras, PyTorch, Scikit-Learn, OpenCV, NumPy, Pandas, SciPy
Developer Tools: Git, GitHub, VS Code, MATLAB, Jupyter
Databases: MySQL, MongoDB
Operating Systems: MacOS, Windows, Linux (Ubuntu)