LEONA E. JOSEPH

Rochester, NY, USA 14623 | leonaej4000@gmail.com | +1 (585) 506 1606 | LinkedIn

*Aspiring AI researcher with hands-on experience in LLMs, CV, and hybrid reasoning systems, **eager to apply** advanced AI techniques to challenges in **various services**.*

EDUCATION

Rochester Institute of Technology, New York, USA ***May 2026***
Master's in Artificial Intelligence *3.62/4.0*

Vellore Institute of Technology, Vellore, India ***Jun 2024***
Bachelor of Technology in Computer Science and Engineering with a focus on IoT *3.58/4.0*

TECHNICAL SKILLS

Programming Languages: Python (advanced; scikit-learn, PyTorch, TensorFlow, GPyTorch, GPflow), R, C, C++, Java, HTML, CSS, JavaScript, PowerShell
ML & Data Science: Computer Vision (YOLOv8, OpenCV), NLP (Transformers, DistilBERT), MLFlow, Data Analysis & Visualization (Pandas, NumPy, Seaborn, Matplotlib), Statistical Modeling, Bayesian Optimization, Gaussian Processes, Few-Shot Learning, Reinforcement Learning
Tools & Practices: Git (collaborative workflows), Docker, Flask, Flutter, Rapid Prototyping, Iterative Development, Experimental Design, Multi-objective Optimization, ML Benchmarking

PROFESSIONAL EXPERIENCE

Research Assistant | Rochester Institute of Technology with Prof. Hakyung Sung, NY, USA ***Sep 2025 – Present***

- Conducting research on improving Large Language Models' (LLMs) understanding of **semantic and syntactic structures** to enhance **grammar feedback for language learners**.
- Utilizing **ASC taggers** and **SpaCy** for linguistic feature extraction and syntactic analysis.
- Developing a **Retrieval-Augmented Generation (RAG)** pipeline to incorporate example-based constructions into model training for more context-aware feedback.
- Exploring methods to integrate **linguistic construction knowledge** into LLM fine-tuning to improve grammatical correction accuracy and interpretability.

AI Researcher | Indian Institute of Science (IISc), Bengaluru, India ***Dec 2023 – Jul 2024***

- Applied computer vision (YOLO, segmentation, ArUco) and deployed Unreal Engine-based synthetic dataset generation increasing the dataset by 500%.
- Built 3D reconstruction pipeline using SfM and NeRF, achieving 97% object proportion accuracy.
- Boosted object detection via dataset analysis and targeted augmentation, improving performance by 7%.

PROJECTS

Hybrid Fake News Detection Framework | RIT ***Spring 2025***

Technologies: DistilBERT, XGBoost, Transformer-based models, Symbolic Reasoning, Python, MLFlow, RAG

- **Led** creation of a Hybrid Feature Fusion model combining DistilBERT, Sentence-Transformer, and Ollama LLM with XGBoost in an ensemble, improving fake news detection accuracy by 10%.
- **Collaborated** with a team to integrate symbolic reasoning and RAG, achieving 83% accuracy and increasing interpretability from 0% to 100% on 2% of predictions flagged as uncertain.
- **Contributed** to transparency by enabling human-readable explanations for predictions, strengthening trust in AI systems.

Forecasting RIT's Power Demand | RIT ***Spring 2025***

Technologies: Python, R, NumPy, Pandas, scikit-learn, statsmodels, TensorFlow, Keras, Matplotlib, Seaborn

- **Preprocessed** and cleaned hourly power demand data with statistical modeling and linear imputation, reducing missing data by 2% and producing a high-quality dataset.
- **Built** forecasting models (Exponential Smoothing, ARIMA, regression with indicators) and deep learning models (RNN, GRU, LSTM) to capture seasonal trends and temporal dependencies.
- **Optimized** prediction accuracy by iteratively evaluating with error metrics (MAPE, RMSE), improving forecast performance by 5% and enabling more reliable energy demand planning.

Published Paper: A Machine Learning Approach to Spam Detection in Social Media Feeds ***Spring 2023***

33rd IEEE Conference on Microelectronics (MIEL), 2023

- **Developed** a hybrid transformer–logic model on the LIAR dataset, boosting accuracy from 80%→83%.
- **Introduced** a contradiction-aware reasoning layer, adding explanations for 2% of uncertain predictions.

ACHIEVEMENTS & EXTRA-CURRICULAR ACTIVITIES

- Awarded Best Oral Presentation at the RIT Graduate Showcase 2025 (out of 25 presenters).
- Winner of Best AI Model in AWARE AI Hackathon (outperformed 16 participants).
- Placed 3rd in Tall Tales Speech Contest, Toastmasters International.