

# Venkata Sai Jagadeesh Dumpa

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## Summary

Early-stage AI researcher with experience working on large language models and retrieval-augmented generation systems. Strong foundation in Object-oriented programming (OOP), hands-on research experience and three published papers at IEEE. Quick learner with a keen interest in Machine Learning, and Natural Language Processing (NLP) eager to translate my extensive education into impactful research. Proven Communicator, Team Player by leading professionals from five corporate organizations in Toastmasters International, a worldwide leadership forum.

## Education

### B.Tech in Computer Science and Engineering

Amrita Vishwa Vidyapeetham University

CGPA: 8.65, First Class with Distinction.

09/2021 – 07/2025

### Exchange Program

University of Twente

02/2025 – 07/2025

- Engineered a **Beyond-Vanilla RAG** system using a custom **Knowledge Graph (NetworkX/GML)** and **Hybrid Semantic Search (FAISS)** to enable multi-hop reasoning over historical narratives.
- Developed sophisticated **Memory Orchestration** pipelines including entity-centric query expansion and **NLP-driven topic extraction** to provide high-quality, long-context awareness to Gemini 1.5 Pro.
- Optimized the intersection of **Structured Memory (Knowledge Graphs)** and **Unstructured Data** to improve narrative faithfulness and reduce hallucinations in streaming LLM environments.

## Technical Skills

Data Structures & Algorithms | Machine Learning |  
Deep Learning | TensorFlow | NLP | RAG | SQL |  
Software Engineering | Agile Software Development

## Programming Languages

Java | Python | C++ | C

## Soft Skills

Leadership | Teamwork | Public Speaking |  
Team Player

## Professional Experience

### Standard Chartered

Apprentice- Technology

09/2025 – Present

- Worked on building an internal Retail & Wealth Banking (RW) Tool enabling admins to approve subscriber requests and operations teams to fetch reports, built using React and Spring Boot.
- Designed and integrated PostgreSQL database schemas to support efficient data retrieval.

## Publications

### Parkinson's Disease Diagnosis from Patients Speech Analysis (IEEE)

Used multiple learning algorithms to detect Parkinson's disease from patient speech analysis. Achieved **95% diagnostic accuracy** with **Random Forest** and **XGBoost** on the Oxford Parkinson's Disease Detection Dataset 197 instances, 22 features. Used **SHAP** to identify the **top 6 most influential features**.

### Deep Learning-Based Analysis of Pediatric Pneumonia Detection in Children using Fine-tuned NasNetMobile Model (IEEE)

Performed a comparative study on **CNN** architectures for pediatric pneumonia detection. Fine-tuned **NasNetMobile** with **Mish activation, batch normalization, and dropout** on a **chest X-ray dataset of 5,232 images**, achieving an **F-score of 92%**.

### Comparative Image Analysis of Chest X-RAY Image Encryption using Symmetric and Asymmetric Key Encryption Algorithms (IEEE)

Explored multilayer encryption strategies for medical image protection. Compared, and **analyzed AES and DES encryption** with **RSA and DSS digital signatures** on chest X-rays. **AES with RSA** yielded the best performance in decryption speed while ensuring **Confidentiality, Integrity, and Authentication (CIA)**.

## **Leadership**

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### **Toastmasters International ☐**

#### *Area G3 Director*

- As an Area G3 Director(2024-25), I served five corporate clubs with ~130 professionals, and leaders across the industry.
- Achieved 100% club retention, and Select Distinguished Status.
- Organized Feb 2024 Leadership Conclave with a team of four, over the course of three months, securing a keynote address and two executive-led panel discussions in a corporate venue.
- Revitalized an underperforming club through targeted strategic planning(2023-24).