KN Lakshmi

Kollam, Kerala | lakshminandakumar30092003@gmail.com | 8921933033 |
linkedin.com/in/lakshmi-nandakumar-ohm2003 | github.com/lakshmi0612

Summary

Artificial Intelligence undergraduate with a strong foundation in Java, Python, Deep Learning, NLP, generative AI and speech models. Skilled in designing, training, and deploying end-to-end ML/LLM solutions using frameworks like TensorFlow and PyTorch. Passionate about building high-impact real-time AI systems and contributing to fast-paced, innovation-driven environments.

Skills

Languages: Python, Java, SQL, HTML, CSS, JavaScript(basic)

Machine Learning: Supervised/Unsupervised Learning, Neural Networks, Speech processing, NLP basics

Concepts: Data Structures & Algorithms, Object Oriented Programming, Operating Systems, Computer Networks, Basic System Design

Platforms: GitHub, IntelliJ, Jupyter Notebook, Google Colab, MS Excel

Soft Skills: Public Speaking, Team Collaboration, Time Management, Problem Solving, Creative Thinking

Education

Amrita Vishwa Vidyapeetham, Coimbatore *2022 – 2026*
B.Tech in Computer Science Engineering - Artificial Intelligence

- CGPA: 7.56/10
- **Coursework:** Java, Python, Machine Learning, Speech Processing, Networking, Operating Systems, Robotics

St Vincent Higher Secondary School, Pala *2019 – 2021*
Higher Secondary Education (Bio-Maths)

- Percentage: 98.9/100

Sri Sri Academy, Kollam *2018 – 2019*
High School Education

- Percentage: 94.6/100

Projects

Automated Raaga Recognition In Carnatic Music Using Lightweight CNN-LSTM Attention Model *Raaga*

- Designed a CNN-BiLSTM-Attention pipeline to classify **10** Carnatic Raagas.
- Built a custom dataset (*SwaraRaagaSudha*) with a total of **92** audio files spanning over **10** hours.
- Performed a total of **8** advanced preprocessing steps to prepare the audio files for classification.
- Obtained a high test accuracy of **98.76%**.

Homophobic and Transphobic Hate Speech Detection in Dravidian Languages: From Dataset Creation to Modality-Based Analysis *Hate Speech*

- Developed a hate speech detection system targeting homophobic and transphobic content in low-resource Dravidian languages (Telugu and Malayalam).
- Created two novel speech datasets with annotated audio clips labeled as Homophobic, Transphobic, or None
- Implemented audio-based models with wav2vec2 feature extraction and BiLSTM with attention for spoken hate speech classification.
- Text-based models were built that transcribed speech and fine-tuned IndicBERT for detecting hate speech

from text, reaching accuracies of up to 88.9%.

Biometric Security Using EEG Signals *Authentication*

- Contributed to the design and implementation of a robust EEG-based authentication system, employing **4** efficient preprocessing steps such as Butterworth filtering, ICA, Synchrosqueezing, and PCA.
- Used **2** ML models, Random Forest and SVM, for classification.
- Obtained an accuracy of **96.88**% with SVM Classifier and **95.05**% with Random Forest.

Satellite Image Super-Resolution Using GANs *SuperResolution*

- Developed a Super-Resolution GAN (SRGAN) model for enhancing satellite image resolution.
- Extracted **256x256** HR and LR patches from the DOTA-v1.0 dataset for training.
- Defined a custom generator with PixelShuffle and a discriminator with LeakyReLU for improved image quality.
- Achieved significant PSNR and SSIM improvements over baseline bicubic upsampling methods.

Reneuw – AI-Powered Stroke Rehabilitation App *Reneuw*

- As a team of **4**, we built a Brain Stroke Rehabilitation app using Flutter for the frontend and FastAPI for the backend.
- Integrated MongoDB for patient data tracking and LangChain and Gemini chatbot for personalised support.
- Implemented a VGG19-based MRI stroke classifier, achieving **94%** accuracy.

Publications

- **Homophobic and Transphobic Hate Speech Detection in Dravidian Languages: From Dataset Creation to Modality-Based Analysis**. KN Lakshmi, K. Hemavardhan Reddy et al. *Fourth Workshop on Multimodal Machine Learning in Low-Resource Languages*, 2025.

- **Automated Raaga Recognition In Carnatic Music Using Lightweight CNN-LSTM Attention Model**. KN Lakshmi, K. Hemavardhan Reddy et al. *SN Computer Science*, 2025 (on review)

Achievements

- Raised SGPA from **4.88** (Semester 1) to **8.67** (Semester 6), demonstrating consistent academic growth.
- Ranked **1st** out of **70** participants in the Level 1 Maths, English, and Science Olympiad (2017).
- Awarded an **A grade** in the Sahodaya English Recitation Competition.

Hobbies

- Reading, Sketching, Journaling, Crocheting

Languages

- Malayalam (Native proficiency), English (Full professional proficiency), Telugu (Basic), Hindi (Basic)