

SENTHAMIL SELVAN S

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PROFESSIONAL SUMMARY

Computer Science undergraduate specializing in Artificial Intelligence and Machine Learning, with hands-on experience in supervised learning, deep learning architectures, and Generative AI systems. Built and deployed end-to-end ML pipelines and transformer-based retrieval applications using Python, Flask, RAG, LLM and FAISS. Strong foundation in data structures, statistical modeling, and optimization techniques, with practical exposure to model deployment and scalable AI workflows. Passionate about designing high-performance intelligent systems that solve real-world problems through data-driven approaches.

TECHNICAL SKILLS

Programming Languages: Python, Java, C++, SQL

Machine Learning: Supervised & Unsupervised Learning, Regression, Classification, Support Vector Machines, Clustering, Feature Engineering, Model Evaluation, Cross-Validation, Hyperparameter Optimization

Deep Learning: Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), Transformers, Transfer Learning, Backpropagation, Gradient Optimization

Generative AI: Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), Prompt Engineering, Embeddings, Vector Search, LangChain, GAN, VAE

Computer Vision: Object Tracking, Object Detection, Object Recognition

Frameworks & Libraries: TensorFlow, Keras, Scikit-learn, Pandas, NumPy, Matplotlib

Deployment & MLOps: Flask, FastAPI, Docker, REST APIs

Cloud & Platforms: Microsoft Azure, Google Cloud Platform, AWS

Databases: MySQL, MongoDB

Version Control: Git

PROJECT EXPERIENCE

CAMPUS MIND – AI-Powered College Management System (RAG Architecture)

Tech Stack: Python, Flask, FAISS, LangChain, LLM, MySQL, HTML, CSS, JavaScript

- Designed and implemented a Retrieval-Augmented Generation (RAG) system integrating LLMs with FAISS-based vector search for semantic information retrieval.
- Developed RESTful backend APIs using Flask and integrated MySQL for structured data management with embedding-based similarity search.
- Built an AI-driven full-stack platform automating academic query handling, improving response relevance and retrieval efficiency through optimized embedding workflows.

Salary Prediction Model using Support Vector Regression

Tech Stack: Python, Scikit-learn, Pandas, NumPy, Flask

- Built a predictive salary estimation model using Support Vector Regression (SVR) with feature scaling and hyperparameter tuning.
- Performed data preprocessing, model validation, and cross-validation to improve generalization performance.
- Deployed the trained regression model as a Flask-based web application for real-time salary prediction.

Real-Time Object Tracking System

Tech Stack: Python, OpenCV

- Developed a real-time object tracking pipeline using color-based segmentation and contour detection techniques.
- Implemented frame-by-frame processing with bounding box localization for dynamic object identification in live video streams.
- Optimized tracking stability and processing performance for efficient real-time computer vision execution.

INTERNSHIP EXPERIENCE

Artificial Intelligence Intern(Online)

Jyesta Corporate Entity | 2 Months

- Gained hands-on exposure to ML model implementation and AI workflow pipelines.
- Implemented supervised learning algorithms using Python-based ML libraries.
- Strengthened understanding of model evaluation metrics, optimization techniques, and deployment fundamentals.

EDUCATION

B.E. in Computer Science and Engineering

Mother Teresa College of Engineering and Technology, Pudukkottai

CGPA: 8.12

2022 – 2026

Relevant Coursework:

Machine Learning, Deep Learning, Data Structures, Database Management Systems, Artificial Intelligence, Probability & Statistics