

# HEMACHANDRAN M

ML Engineer | Data Scientist

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## SUMMARY

Machine Learning Engineer with experience across machine learning, deep learning, computer vision, and data analytics. Proficient in designing end-to-end ML pipelines, integrating and deploying models, and performing statistical analysis for model evaluation. Experienced in AI agent development, including model integration and API-based inference, within cloud-based and data-driven applications. Interested in contributing to AI/ML development initiatives in a production-oriented environment.

## SKILLS

- Languages: Python, SQL
- ML & AI: AI Agent, Machine Learning, Deep Learning, CNN, Computer Vision, NLP
- Data Science : Data Visualization, Statistical Analysis, Data Preprocessing, Predictive Modeling
- Libraries: Pandas, NumPy, Scikit-learn, TensorFlow, Matplotlib, FastAPI, OpenCV, Streamlit
- Databases/BI: SQL, MySQL, Tableau, Power BI, Excel

## WORK EXPERIENCE

### Application Engineering Intern

Tidel Park Tharamani, Chennai

- Contributed to AI application development on live projects using modern AI architectures.
- Designed and deployed RAG (Retrieval-Augmented Generation) pipelines for knowledge-grounded AI responses.
- Developed AI agents for task automation and intelligent decision support, and implemented citation handling to improve AI outputs.

### Research Intern, Tamil Stone Script Recognition

Centre for Development of Tamil in Engineering & Technology, Anna University

- Contributed to a government-funded Chief Minister Research Grant (CMRG) project focused on digitizing historical scripts to improve archival accessibility.
- Developed a denoising algorithm with automated background suppression, increasing inscription clarity by 60%.
- Segmented overlapping and damaged Tamil character glyphs, applying data augmentation methods to expand the training dataset and improve recognition performance.

## EDUCATION

### BACHELOR OF TECHNOLOGY IN ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Jeppiaar Institute of Technology, Chennai | CGPA - 8.16 | 2021-2025

### HIGHER SECONDARY EDUCATION (+2)

Avichi Higher Secondary School, Chennai | Percentage - 88% | 2020-2021

## PROJECTS

### AI Chatbot Development

- Built an AI-powered Python chatbot with direct API integration, focusing on backend performance without reliance on UI frameworks.
- Implemented secure API handling, message flow logic, and custom prompt engineering, reducing response errors by 30% during testing.
- Defined a modular and scalable architecture, enabling faster feature additions and improving code maintainability.

### AI-Driven Health Diagnosis

- Designed a medical image classification system using a pretrained EfficientNet architecture, processing 3 disease categories including brain tumors, lung cancer, and pneumonia.
- Classified brain tumors, lung cancer, and pneumonia with high accuracy.
- Used OpenCV-based preprocessing and augmentation to reduce overfitting by 25%.

### House Price Prediction

- Implemented regression-based house price prediction models using 5,000+ real-world data records, achieving a 15% improvement in prediction accuracy.
- Performed feature extraction, transformation, and model evaluation using RMSE and  $R^2$  metrics to validate model performance and reliability.

## CERTIFICATIONS

- Introduction to Machine Learning – NPTEL
- SQL & Relational Databases – Cognitive Class
- Explore ML Using Python – Infosys
- AWS Cloud Practitioner – AWS re/Start Program
- JobReady Employability Skills – Wadhavani Foundation