# Aaditey Pillai

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## **Education**

**Master of Engineering in Artificial Intelligence** (GPA: 4.00/4.00) Durham, NC

Duke University August 2024 - May 2026

Relevant Courses: LLMs, Deep Learning Applications, Modeling Process & Algorithms

**Bachelor of Technology in Electronics & Communications Engineering** (GPA: 9.34/10.00) Chennai, India

SRM Institute of Science and Technology June 2019 - May 2023

Relevant Courses: Python, C, C++, Java, Data Structures, Computer Communication Networks

## **Work Experience**

## **Machine Learning Intern** September 2023 - June 2024

## Celusion Technologies Mumbai, India

## Utilized Pandas, NumPy, and Scikit-Learn for data pre-processing of 100,000+ records of raw data with techniques such as feature selection and duplicate removal.

## Performed feature engineering techniques such as location frequency, season counts, and zip code encoding to boost model accuracy.

## Built an ensemble model (random forest, gradient boosting, logistic regression) with voting classifier, achieving an area under curve (AUC) of 0.96 via hyperparameter tuning.

## Automated a machine learning pipeline such as imputation, encoding, and scaling to streamline large-scale data handling and improve efficiency.

**Cyber Security Intern** January 2023 - July 2023

BSE Technologies Mumbai, India

* Achieved a 95% system uptime by configuring and maintaining a security information and event management (SIEM) system, IBM QRadar, setting up data sources, and creating/tuning rules.
* Investigated 50+ incidents, achieving an average resolution time of 4 hours per incident.
* Collaborated on integrating IBM QRadar with 2 new security technologies, improving threat detection and enhancing cross-team workflows for enhanced security response.

**Projects**

**AI-Powered RAG: Nutrition Text Assistant** - [Link](https://github.com/aaditey932/rag-app) February 2025 - March 2025

* Developed a retrieval-augmented generation (RAG) application from scratch using OpenAI GPT-4o, Pinecone, and Streamlit to generate contextually accurate responses from scientific research papers on human nutrition.
* Optimized retrieval performance, achieving 86.67% context recall, 61.83% faithfulness, and 67.00% factual correctness, using embedding models, vector databases, and automated evaluation with retrieval augmented generation assessment (RAGAs).

[**CoreTransformer**](https://github.com/aaditey932/transformer-from-scratch) - [Link](https://github.com/aaditey932/transformer-from-scratch) February 2025

* Implemented an LLM transformer prototype from scratch using only NumPy, building core components like multi-head self-attention, positional encoding, and feed-forward networks.

[**Retinal Fundus Disorder Detection**](https://github.com/aaditey932/retinal-fundus-disorder-detection) - [Link](https://github.com/aaditey932/retinal-fundus-disorder-detection) January 2025 - February 2025

* Developed an AI-powered deep learning model using MobileNetV3 and CLAHE preprocessing to classify 11 retinal disorders from fundus images with enhanced contrast and feature extraction.
* Optimized training with PyTorch, adam optimizer, and data augmentation to improve generalization.
* Trained and deployed the model on Google Cloud TPUs/GPU.

**ReadSmart** November 2024

* Designed and implemented a generative AI web app prototype leveraging natural language processing (NLP) to create personalized reading comprehension passages and follow-up questions for elementary students.
* Utilized OpenAI GPT-4 and langchain to generate real-time text content.

**Weakly Supervised Road Segmentation using Satellite Feed** July 2023 - September 2023

* Developed an innovative computer vision system leveraging a satellite feed for road region segmentation using weakly supervised learning techniques using TensorFlow.