Hi, I'm Dhanesh Raju, a creative and enthusiastic technologist passionate about solving real-world problems using advanced technologies, especially Artificial Intelligence. I strive to identify and address challenges across diverse sectors including industry, society, healthcare, and government policymaking, aiming to contribute toward standardized, efficient, and intelligent solutions.

I hold a Master's degree in Artificial Intelligence from the University of Essex, graduating in March 2025, and was honored with the Big Essex Award for my outstanding performance. Additionally, I earned a Postgraduate Diploma from the University of Southern Denmark, where I attended a summer school program focused on AI applications in healthcare, particularly in medical data and imaging.

With strong experience in programming, parallel computing, and handling supercomputing environments, I currently contribute as a Data Engineer and LLM Developer at a UK-based startup, Fluck, based in Colchester. We are developing a robust web platform for business clients to manage their financial data. My role focuses on building an efficient Retrieval-Augmented Generation (RAG) system for domain-specific document processing. I integrate secure pipelines and fine-tuned language models to ensure 100% accurate, context-aware responses. I continue to support and guide this company during my free time, with the goal of contributing to its future success.

During my Master's, I undertook an 8-month industry-collaborated research internship with Stuart Turner, AGM, and the University of Essex. I developed an end-to-end predictive maintenance solution for water pumps deployed across the UK. The software collects real-time data from microcontrollers installed in the pumps, processes it via APIs, and uses LSTM, BiLSTM, and fuzzy logic models to forecast faults up to a week in advance. It alerts maintenance teams with actionable insights including fault type, location, and parts required. The system is deployed on industrial-grade servers and features a live dashboard for visual monitoring. This work was guided by Prof. Hani Hagras and Dr. Shreyas Upasne.

As part of a research collaboration with clinicians and academics, I worked on a project for automated sleep stage classification and early diagnosis of sleep disorders. Using 312 GB of EEG-based polysomnographic data from the 2018 PhysioNet dataset, we built a deep learning pipeline leveraging signal processing, feature extraction, and GPU/HPC clusters. The model achieved over 87% accuracy, though further work is being done to improve generalization to unseen data.

At the University of Southern Denmark, I contributed to a prostate cancer and epilepsy seizure detection project using MRI and EEG signals. The goal was early-stage diagnosis through CNNs and LSTM architectures trained on sensitive real-time medical datasets. We are refining the model's accuracy and awaiting grant funding to expand the project across additional disorders.

In a separate smart grid forecasting project, I developed time-series models using weather data to predict surplus renewable energy (solar/wind) for dynamic energy distribution. The project involved real-time data ingestion through APIs and websockets, dealing with noisy and inconsistent formats.

I also built a Multilayer Perceptron (MLP) neural network from scratch using only NumPy for precision rocket landing simulations. This model learned from game-based environments and featured custom implementations of backpropagation and weight tuning.

In robotics, I designed and deployed a fuzzy logic-based control system for a TurtleBot3 within the ROS framework. It was tested in both simulation (Gazebo) and real-world environments, with ongoing work to improve its robustness against sensor noise.

I led an NLP-based project to detect offensive and abusive online content, aiming to reduce cyberbullying. The solution combines LLMs, image recognition, sentiment analysis, and strict content policies to detect and remove harmful material in real time.

🚀 Vision & Future Goals

Currently, I am self-studying Brain-Computer Interfaces (BCI) and exploring their integration with AI and quantum computing. I aim to propose a system with enhanced cognitive intelligence, capable of real-world task execution by leveraging human-like consciousness. This research aspires to support people with disabilities by enabling brain-driven feedback systems transforming accessibility in ways previously unimagined.

My broader mission is to continue building solutions that bring impactful change to the healthcare industry, enabling early diagnosis and prevention of diseases through intelligent systems powered by ethical AI.