

## VIRESH NAGOUDA

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Graduating June 2025 | Dual Degree: B.Eng (Hons) in Computer Engineering from APU, Malaysia and M.Eng from DMU, UK

## PROFESSIONAL SUMMARY

Versatile Computer Engineering student with robust experience across AI, IoT, Cloud, and Big Data domains. Proven track record in delivering scalable solutions through embedded systems, cloud-first architectures, deep learning models, and data analytics. Adept in integrating edge-to-cloud pipelines using AWS, real-time AI inference systems, and intelligent dashboards. Passionate about building full-stack intelligent systems. Certified in Generative AI from Google x Kaggle.

## KEY SKILLS

- AI/ML: TensorFlow, PyTorch, OpenCV, YOLOv8, Transfer Learning, CNNs, LLMs, RAG, Prompt Engineering
- IoT & Embedded: Raspberry Pi, Arduino, GPIO, MQTT, Serial Protocols, Sensor Fusion, Jetpack Compose
- Cloud & DevOps: AWS (EC2, S3, Lambda, Cognito, DynamoDB, IAM), Azure VMs, Firebase, REST APIs, Docker, GitHub Actions
- Data Science: Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn, Keras, SQL, PostgreSQL, Azure SQL
- Big Data Tools: Google Cloud, Apache Kafka, Spark (basic), Airflow (basic)
- Programming: Python, Java, C++, Kotlin, JavaScript (Node.js), SQL
- Tools & Monitoring: Git, Postman, Figma, VS Code, Linux, Prometheus, Grafana

## PROFESSIONAL EXPERIENCE

Intern - Tata Consultancy Services (TCS) | 10 Months

- Co-developed AquFish, an IoT-powered aquaculture system with real-time monitoring and predictive analytics.
- Integrated Raspberry Pi with AWS services using Amplify, Cognito, and DynamoDB for secure sensor-data pipelines.
- Designed and deployed AI models for fish health detection and growth prediction using TensorFlow on AWS EC2.
- Built cross-platform mobile app with Jetpack Compose to display real-time metrics for farmers.
- Performed EDA and built ML pipelines using scikit-learn for FCR prediction and sensor anomaly detection.
- Architected cost-optimized cloud infrastructure, achieving a 30% reduction in idle compute spend.

## ACADEMIC PROJECTS

### AI-Powered Environmental Monitoring Platform (GDP)

Led a capstone project combining IoT and AI to monitor aquaculture environments. Integrated environmental sensors with Raspberry Pi and streamed live video to cloud. Applied TensorFlow models to predict fish health, size, and water quality trends. Incorporated NeRF-based 3D rendering using Python for immersive monitoring and dashboard visualization. Backend hosted on AWS (EC2, S3, Cognito) with APIs built in Flask. Enabled predictive insights for harvest planning and feed optimization.

### Cafe Website with Multi-Cloud Architecture

Developed a dynamic web application for a university cafe using React.js and Node.js. Designed separate login portals for admin, customer, and staff with Firebase Authentication. Real-time order tracking and analytics enabled via Firebase Realtime DB and Google Analytics. Hosted using Azure App Service and Azure SQL for robust backend operations. Employed CI/CD with GitHub Actions and Docker for deployment. Dashboard showed top-selling items, order frequency, and customer behavior.

### YOLOv8 Fish Detection Research

Created a research project focused on real-time fish detection using computer vision. Built a custom dataset with annotated bounding boxes using Roboflow and OpenCV. Implemented motion analysis to filter noise and small particles. Trained YOLOv8 segmentation models to accurately detect fish in dynamic water conditions. Evaluated model with mAP and precision-recall curves. Final model was deployed on edge devices (Jetson Nano/RPi) for live aquaculture surveillance.

### Waste Management & Sustainability (BDA Project)

Conducted a big data analytics project using the World Bank's "What a Waste" dataset and local city-level data. Cleaned and merged multiple datasets using Pandas and SQL. Applied multivariate regression to analyze recycling trends and identify key sustainability factors across regions. Performed clustering (KMeans) to group similar countries based on waste behavior. Created interactive visualizations using Matplotlib and Seaborn. Presented insights in a report with actionable policy recommendations.

### Digital Clock, Smoke Detection, and GUI Cafeteria System

- Simulated a fully functional digital clock using logic gates in Multisim, understanding timekeeping hardware logic.
- Designed an Arduino-based fire alarm system using MQ sensors and a buzzer for real-time emergency alerts.
- Developed a Java Swing-based cafeteria billing system with item selection, total calculation, and GUI interaction.

## EDUCATION

Dual Degree (Expected June 2025)

- B.Eng (Hons) in Computer Engineering - Asia Pacific University (APU), Malaysia
- M.Eng (Hons) in Computer Engineering - De Montfort University (DMU), UK

## EXTRACURRICULARS

- Participated in University Modelling Event | 3rd Place in Bowling & Cricket at APU Sports Carnival
- Enthusiast in Football, Badminton