VASITHA TILAKUMARA

Data Analyst | Data Engineer

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CAREER SUMMARY

Engineer with 3+ years of experience across embedded systems, computer vision, and intelligent automation, now applying advanced data science and AI techniques to real-world engineering problems. Skilled in Python, SQL, R, and cloud technologies, with a strong foundation in sensor integration, machine learning, and control systems.

Graduate of Master of Data Science (RMIT) and BSc (Hons) Mechatronic Engineering (AIT) with hands-on experience developing embedded applications, AI pipelines, and simulation tools for robotics and autonomous systems.

EXPERTISE

Data Engineering & Cloud Analytics (AWS) | Web Dashboard Development | Machine Learning & Predictive Modelling | Embedded Systems Development | Computer Vision & Image Processing | Simulation & Control Systems | Research Documentation & System Integration

CORE TECHNOLOGIES

- **Languages:** Python | SQL | R
- **AI & Vision:** PyTorch | CNNs | Image Segmentation
- **Data & Cloud:** AWS (Glue | Athena | S3 | Lambda) | Power BI | GCP (BigQuery – familiarising) | REST APIs | Docker (basic)
- **Data Engineering & Analytics:** ETL Pipelines | Data Wrangling | Feature Engineering | Predictive Modelling | Machine Learning (Regression | Classification | Clustering)
- **Databases:** MySQL, SQLite, DynamoDB
- **Big Data:** [Apache Hadoop | Apache Spark | Apache Pig | Apache Hive] - (basics)
- **Visualization:** Power BI (DAX | RLS) | Plotly | Shiny | Looker Studio | Tableau | Dashboards
- **Tools:** GitHub | VSCode | Jupyter
- **Soft Skills:** Stakeholder Collaboration | Documentation | Agile Workflow | Research Presentation

LEGACY & FOUNDATIONAL TOOLS

- **Languages:** C++, Java, Scala, JavaScript, MATLAB & Simulink, HTML/CSS
- **Vision:** OpenCV, Adaptive Vision, Object Tracking
- **Simulation & Control:** MATLAB/Simulink | PID Control | Hardware-in-the-Loop (HIL) | Model-based Design
- **Frameworks & Platforms:** SolidWorks, Blender, ESP-IDF (Embedded), Arduino IDE, FreeRTOS, Magento, WordPress
- **Databases:** MySQL, SQLite, DynamoDB, PostgreSQL (earlier work)
- **Legacy / Academic Tools:** Hadoop, Hive, Pig, MATLAB Simulink Blocksets for Zynq-7000 & ESP32
- **Other Tools:** FluidSIM, Proteus, Adaptive Vision (older version), MS Excel Automation (VBA), Google Script APIs
- **Focus Areas:** Test Automation, Manufacturing Data Logging, Pneumatic Machine Optimisation, Quality Assurance

PROFESSIONAL EXPERIENCE

DATA SCIENCE INTERN | EPCA | Australia — Feb 2025 – Jul 2025

- Designed and deployed AWS-Power BI data pipelines for ingesting and analyzing EV telemetry.
- Built Spark + Glue ETL workflows integrating data from battery, vehicle, and drive modules.
- Automated Athena query partitioning and error recovery using Python logging.
- Improved data monitoring and reliability across multiple cloud systems

EMBEDDED ENGINEER | Aimagin Co., Ltd | Thailand — Oct 2020 – Jun 2023

- Developed and optimized embedded systems in C++ and MATLAB/Simulink.
- Implemented a floating license system using SQLite and REST APIs for MATLAB blocksets.
- Developed Simulink code generation blocksets for ESP32 and Zynq-7000 platforms.
- Conducted testing under IEC-62304 medical device standards.
- Authored user manuals and technical documentation for internal and client use

MANUFACTURING ENGINEER | Telene Pte Ltd | Singapore Feb 2019 – Sep 2020

- Improved manufacturing process efficiency via pneumatic machine optimization.
- Built Excel- and Python-based automation tools for data validation and reporting.
- Designed iPhone case enclosures and manufacturing documentation using SolidWorks, ensuring tolerance accuracy for injection molding.
- Created product renders and marketing videos/images to support promotional campaigns.
- Enhanced data accuracy by 20% through improved validation scripts

QUALITY ASSURANCE ENGINEER | Lanka Solutions | Sri Lanka Oct 2018 – Feb 2019

- Supported QA testing for hardware and iOS applications, including unit and regression tests.
- Conducted product compliance reviews and documented system defects.
- Contributed to improving test coverage and technical documentation for product launches

FREELANCE & ACADEMIC | Engineering Roles 2016–2021

- Freelance Product Designer | DCD Australia (Remote) | Short-term Contract, 2020-2021
  - Designed manufacturable product models and technical drawings for Australian clients using SolidWorks.
  - Delivered design-for-manufacturing (DFM)–ready files aligned with local supplier capabilities.
- Mechanical Design Consultant | Pepper Export Farm | Sri Lanka | Part-time, 2020
  - Designed custom pepper processing and grading equipment for export-scale operations.
  - Developed mechanical components in SolidWorks and assisted in fabrication and assembly.
  - Improved processing consistency and throughput by standardizing conveyor and cutting mechanisms.
- Capstone Project:
  - Automatic Target Detecting & Paintball Shooting Turret - Designed autonomous turret using OpenCV + PID control.
- Internships:
  - MAS Intimates - Built Elastic Measuring Machine and Sellotape Automation Machine for production optimization.
  - Hana Semiconductor - Developed tester simulator for production line validation.
  - Self-Transforming Caterpillar Robot (IRSEA, 2016) - Research prototype demonstrating modular robotics

RELEVANT PROJECTS

BATTERY ELECTRIC TRUCK ANALYTICS (EPCA, 2025)

- Built a cloud-connected sensor analytics pipeline using AWS Glue, Athena, and Power BI for real-time vehicle telemetry.
- Collaborated with engineers to correlate analytics results with hardware diagnostics and predictive maintenance models.

SPORTS PARTICIPATION & CHURN MODELLING (RMIT, 2024)

- Applied ML algorithms (Random Forest, Logistic Regression) to predict participation and churn behaviours using app data and fitness centre dataset
- Upgraded the project into a modular, interactive analytics dashboard using Gradio and Plotly; Combining machine learning predictions, user engagement insights, and business-friendly visuals.

AUTONOMOUS TARGET DETECTION & PAINTBALL TURRET (CAPSTONE, 2018) | AIT, Thailand

- Designed and implemented a vision-based autonomous turret using OpenCV for object detection and PID control for motion tracking.
- Integrated real-time image acquisition and servo control for accurate targeting and tracking.

GESTURE-CONTROLLED AUTONOMOUS CARRIER ROBOT (AIT, 2018)

- Designed a robotic carrier using hand-gesture control with IMU sensors and embedded C++.
- Integrated obstacle avoidance logic and real-time response via sensor fusion algorithms.

AI / DATA SCIENCE / CLOUD PROJECTS

- **CNN IMAGE CLASSIFICATION (RMIT, 2025)** - PyTorch CNN model for cancer cell classification using histopathology images
- **JOB MARKET ANALYTICS DASHBOARD (2025)** - Web-scraped Seek data - BigQuery + Looker Studio to visualize job demand trends

- **HOMELESSNESS INSIGHTS DASHBOARD (RMIT, 2024)** - R Shiny geospatial dashboard visualizing Australian housing data
- **AFL PLAYER PERFORMANCE PREDICTION (RMIT, 2023)** - Ensemble ML models (Logistic Regression, Random Forest, Gradient Boosting) predicting player potential; dashboards for recruiters

EMBEDDED SYSTEMS / ROBOTICS / MECHATRONICS PROJECTS

- **PICK & PLACE MACHINE FOR LCD SCREEN POSITIONING (TELENE PTE LTD, 2019)** – Vision-based alignment system integrating sensors and actuators for precision manufacturing
- **TESTER SIMULATOR (HANA SEMICONDUCTOR INTERNSHIP, 2017)** - Designed industrial test machine simulator for semiconductor equipment validation
- **AUTOMATIC ELASTIC MEASURING DEVICE FOR DENIM FABRICS (MAS INTIMATES INTERNSHIP, 2016)** - Built machine to measure fabric flexibility to its elastic limit. Pneumatic system for fabric elasticity testing, automating stretch and release measurements
- **AUTOMATIC SELLOTAPE MACHINE (MAS INTIMATES INTERNSHIP, 2016)** - Designed automated tape-cutting and application mechanism
- **SELF-TRANSFORMING CATERPILLAR ROBOT (SAITM IRSEA, 2016)** - Adaptive robotic system capable of shape transformation to avoid obstacles

WEB / SYSTEMS / SOFTWARE PROJECTS

- **FLOATING LICENSE MANAGEMENT (AIMAGIN, 2021)** – SQLite and REST API-based license system integrated with MATLAB products for distributed clients
- **DIRECTORY & BLOG THEMED WEBSITE (WORDPRESS, 2020)** – CMS-based website with blog and directory functions for portfolio and client projects

EDUCATION

Master's Degree | Data Science | RMIT | Melbourne, Australia 2023 – 2025

- Relevant Coursework: Applied Analytics, Data Wrangling, Database Concepts, Big Data Analytics, Machine Learning, Cloud Computing (AWS), Computational Machine Learning, Algorithms & Analysis, Data Mining, Data Visualization and Communication, Database Concepts
- GPA: 3.9

Bachelor's Degree | Mechatronic Engineering | Thailand | AIT | Bangkok, Thailand 2014 – 2018

VOLUNTEER

MLAI

Event Planner | Melbourne, VIC

RMIT

Academic Mentor | Melbourne, VIC