S. PATHUM MADHUSANKA

INFORMATION TECHNOLOGY UNDERGRADUATE

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PROFILE

Third-year IT undergraduate at SLIIT with hands-on experience in full-stack development, backend microservices, software quality assurance, and AI-enabled applications. Skilled in applying Python and R to machine learning, statistical modelling, predictive analytics, and data visualization. Developed explainable AI solutions, intelligent decision support systems, and LLM-powered applications with cloud deployment. Interested in software engineering, AI and data science, quality assurance, and cloud and DevOps engineering.

MAIN PROJECTS

Click the project titles to open them

EnergyWise AI – Intelligent Building Energy Analytics & Optimization System — 2026

Individual project | R, Shiny, ggplot2, Plotly, dplyr, glmnet, Random Forest, XGBoost, PCA

- Developed an end-to-end machine learning system for predicting building heating and cooling loads using 768 simulated building configurations.
- Applied exploratory data analysis, hypothesis testing, ANOVA, correlation analysis and Principal Component Analysis (PCA).
- Trained and evaluated 12 predictive models across six regression algorithms using grouped cross-validation and hyperparameter tuning.
- Developed and deployed an interactive R Shiny dashboard on Posit Connect Cloud, featuring 21 analytical visualizations, explainable AI, what-if simulation, bulk prediction and weighted design ranking.
- Live app: EnergyWise AI on Posit Connect Cloud

CardioPredict AI – Heart Disease Prediction System — 2026

Individual project | Python, Pandas, NumPy, Scikit-learn, SHAP, Matplotlib, Seaborn, Streamlit

- Developed an end-to-end machine learning pipeline with data preprocessing, feature engineering and feature selection.
- Evaluated Logistic Regression, Random Forest and SVM using stratified 5-fold cross-validation, achieving 88.52% test accuracy and 92.86% recall with Logistic Regression.
- Integrated SHAP-based Explainable AI (XAI) for global feature importance and individual prediction interpretation.
- Developed an interactive prediction and model analytics dashboard and deployed the application on Streamlit Community Cloud.
- Live app: cardiopredict-ai-777.streamlit.app

EliteAuto – AI-Powered Dealership Management System — 2026

Individual project | Python, Pandas, Scikit-learn, Flask, Gemini 2.5 Flash, Java, Spring Boot, React, MySQL, ReportLab

- Developed and integrated a Random Forest regression model to estimate vehicle market prices from vehicle attributes, applying Python and Pandas for data processing.
- Built a Flask AI microservice for model inference and generative AI integration with a Spring Boot backend.
- Implemented LLM-powered negotiation, customer intent analysis and automated lead scoring; extracted structured vehicle data from unstructured advertisements.
- Developed inventory valuation analytics and automated PDF brochure generation.

MediSafe AI – Pharmacy and Clinical Assistant — 2026

Individual project | Java, Spring Boot, React, Google Gemini API, REST APIs, Generative AI, NLP

- Integrated a large language model to support natural language conversations in English and Sinhala.
- Implemented PDF document processing and AI-assisted medical report analysis, along with voice-based input.
- Developed exportable chat records for structured information management.

RideLink – Microservices-Based Ride-Sharing System — 2026

Group project (4 members) | Account Service | Java 21, Spring Boot, Spring Security, MongoDB, JWT, REST APIs, Swagger/OpenAPI, Git

- Developed the Account Service microservice for user registration, authentication and account management.
- Implemented JWT-based authentication and role-based access control, with REST APIs and MongoDB persistence.
- Applied independent service data boundaries and inter-service API integration; collaborated using feature branches and pull requests.

LifeDrop – Smart Blood Bank Management System 2025

Group project | Blood Inventory Management | Java, Spring Boot, React, MySQL, Spring Data JPA, REST APIs

- Developed the blood inventory management module with stock monitoring, collection and expiry date tracking, and low-stock alerts.
- Implemented REST APIs and database integration for inventory operations, collaborating with team members to integrate the module.

Assignment Service Web Application 2025

Team project (2 members) | Software Quality Assurance | Java, Spring Boot, React, PostgreSQL, AWS EC2, Azure, Oracle Cloud, Nginx, Vercel

- Contributed to a two-member team developing a full-stack assignment service platform, focusing on software quality management.
- Reviewed frontend and backend code to identify defects, maintainability issues and potential improvements.
- Collaborated with the developer to improve code quality and application reliability.
- Live website: www.assignmentservice.net

Orbit – Project Management System 2025

Individual project | React, Node.js, Express, MongoDB, Mongoose, JWT, Nodemailer, CSS

- Built a full-stack MERN platform for workspace collaboration, project organization and task management.
- Implemented RESTful APIs, JWT authentication, Bcrypt password hashing, email verification and role-based access control.
- Developed automated progress calculations and task status tracking, with a responsive glassmorphism interface.

SmartCampus – Campus Management System 2024

Individual project | React, Node.js, Express, MongoDB, JavaScript, HTML, CSS, JWT, Bcrypt

- Developed a MERN campus platform with separate student and administrator dashboards.
- Implemented academic resource management, lecture hall reservations and user profile management.
- Integrated email verification, notifications, password hashing and role-based authentication.

EDUCATION

BSc (Hons) in Information Technology Specializing in Information Technology **2024 – Present**
Sri Lanka Institute of Information Technology (SLIIT)

Diploma in Business IT **February 2024**
Siksil Institute of Business & Technology (SIBT)

G.C.E. Advanced Level – Commerce Stream **2022**
Accounting – B | Economics – B | Business Studies – C

G.C.E. Ordinary Level Examination **2019**

CERTIFICATIONS

MongoDB Data Modeling Path – MongoDB **September 2026**

Digital Skills: Artificial Intelligence – Accenture via FutureLearn **May 2023**

CORE SKILLS

Programming	Java, Python, JavaScript, R, C#, C++, Kotlin
Web & Mobile Development	React, React Native, Spring Boot, Node.js, Express, Flask, Streamlit, R Shiny, HTML, CSS
AI & Data Science	Machine Learning, Predictive Analytics, Statistical Analysis, EDA, Explainable AI (XAI), Generative AI, NLP, Pandas, NumPy, Scikit-learn, ggplot2, Plotly
Databases	MySQL, MongoDB, PostgreSQL, Data Modeling
Cloud & DevOps	AWS, Docker, GitHub Actions, Netlify, Streamlit Community Cloud, Posit Connect Cloud
Quality Assurance	Code Review, Software Quality Management, API Testing
Tools & Architecture	Git, GitHub, Postman, IntelliJ IDEA, VS Code, RStudio, Jupyter Notebook, REST APIs, Microservices, JWT
Personal Skills	Teamwork, Communication, Critical Thinking, Problem-Solving

LANGUAGES

Sinhala – Native | **English** – Professional Working Proficiency