SARITH METHVIRU DODANGODAGE

INSTRUMENTATION & AUTOMATION ENGINEERING UNDERGRADUATE

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PROFESSIONAL SUMMARY

Third year Instrumentation and Automation undergraduate at the Faculty of Technology, University of Colombo, with strong interests in industrial automation, embedded systems, instrumentation, robotics and control. Hands-on experience includes ESP32-based sensor systems, PCB design, PLC programming, motor control, embedded firmware, prototyping and system integration, supported by data processing and engineering software. Strong in practical problem-solving, debugging and developing working systems from engineering concepts. Seeking an industrial internship in instrumentation, automation, control, embedded systems or related engineering environments where I can contribute technically while gaining practical industry exposure.

CORE SKILLS

Instrumentation & DAQ: Temperature, moisture, CO2 and O2 sensing; sensor interfacing; ADC/I2C-based acquisition; calibration-oriented testing; data validation.

Industrial Automation: PLC programming, Ladder Logic, industrial automation fundamentals; academic exposure to motor drives, power electronics and control systems.

Embedded Systems: ESP32, ESP-IDF, Arduino, C/C++; real-time sensor reading, motor/encoder interfaces, IMU integration, OLED/LCD user interfaces.

Electronics & PCB: Schematic capture, breadboard prototyping, PCB design, analog/digital electronics, signal conditioning and circuit troubleshooting using KiCad and OrCAD.

Robotics & Motion: Autonomous navigation logic, encoder-based motor control, distance sensors, IMU feedback, simulation and host-side firmware testing.

Engineering Software: SolidWorks, KiCad, OrCAD, MATLAB/Octave, Python, Git/GitHub and Linux; Pandas/NumPy for engineering-data processing.

EDUCATION

University of Colombo - Faculty of Technology
2023 - Expected 2028

BEngTech (Hons) in Instrumentation and Automation | Homagama, Sri Lanka

Relevant coursework: Sensors & Transducers; Data Acquisition; Digital Signal Processing; Microcontrollers; Robotics; FPGA; Industrial Automation; Power Electronics; Motor Drives; PLCs; Analog & Digital Electronics.

University of Moratuwa
2023 - Expected 2027

Bachelor of Information Technology - External Degree | Moratuwa, Sri Lanka

Relevant coursework: Programming; OOP; DBMS; Networks; Probability & Statistics; Artificial Intelligence; Machine Learning; Research Methodology.

SELECTED PROJECTS

Compost Monitoring & Maturity Assessment System
Aug - Oct 2026

Individual | ESP32 | Instrumentation | Sensors | PCB Design | SolidWorks

Designed an ESP32-based instrumentation system for compost temperature, moisture, CO2 measurement. Developed the complete schematic and PCB, sensor interfaces, power architecture, 16x2 I2C display, local controls and indicators. Produced a 3D enclosure model in SolidWorks for component placement and enclosure planning, and verified the electronics through breadboard prototyping and structured sensor testing.

OBSIDIAN - Autonomous Micromouse Robot
Jul - Sep 2026

Embedded Robotics | ESP32 | ESP-IDF | C/C++

Developed the embedded firmware for an autonomous Micromouse robot, integrating navigation logic, sensor feedback, motor control, user-interface functions and system-level testing. Implemented ESP-IDF architecture, encoder-equipped N20 motor control, distance sensing, IMU feedback, OLED/DIP-switch interfaces, simulator integration and host-side tests before physical deployment.

Analog FSK Infrared Communication System
Sep - Nov 2025

Individual | Analog Electronics | FSK | Infrared | PCB Design | OrCAD

Designed and fabricated an analog FSK infrared communication system using 38 kHz and 1 kHz channels, a 555-timer transmitter and op-amp receiver stages. Built band-pass, envelope-detection and comparator stages, diagnosed harmonic crosstalk in the high-frequency receive path and corrected false triggering through circuit modification and threshold tuning.

Three-Floor PLC Elevator Control System

Siemens S7-200 | STEP 7-Micro/WIN | Ladder Logic | Floor Sensors | Motor Control

Programmed the control logic for a three-floor model elevator using a Siemens S7-200 PLC and STEP 7-Micro/WIN, with floor sensors providing position feedback to the controller. Implemented forward/reverse motor control, floor-request handling, sequential movement logic and safety interlocks to ignore invalid requests, stop correctly at selected floors and prevent unsafe direction changes.

ADDITIONAL RELEVANT TECHNICAL PROJECTS

SENTINEL - Multi-Sensor Remote Monitoring & Predictive Analytics Mar - Apr 2026

Team INNOX | Multi-Sensor Monitoring | Python | FastAPI | XGBoost | Isolation Forest

Developed the analytics backend for a multi-sensor monitoring prototype using physiological and motion data. Built a three-layer pipeline combining personalised anomaly detection, short-horizon prediction and deterministic triage, with 5-, 10- and 15-minute forecasts exposed through FastAPI and integrated with Firebase. Achieved Top 5 at Hemas AITHON 2026.

JellyCast - Environmental Monitoring Data & Forecasting Jul 2026 - May 2027

(Expected) Individual | Time Series | Environmental Data | Decision Support

Developing a leakage-aware forecasting workflow for next-month jellyfish abundance using biological observations together with temperature, salinity, currents, chlorophyll and rainfall. The project strengthens experience in time-aligned environmental datasets, sensor-derived variables, validation and engineering decision-support outputs.

PROFESSIONAL EXPERIENCE

People's Action for Free and Fair Elections (PAFFREL) - Colombo 2024 - 2025

Data Processing Agent - Local Authorities Election 2025 | Call Centre Agent - 2024 Elections

Processed and validated high-volume nationwide datasets and developed a Python/Pandas workflow to clean incoming Excel files, identify duplicates, invalid IDs, formatting inconsistencies and incomplete reports. Worked in time-sensitive election operations requiring accurate data handling, systematic validation and troubleshooting.

Sri Lanka Rupavahini Corporation (SLRC) - Colombo Jun - Jul 2023

Trainee - Social Media Unit

Supported RooTunes and Channel Eye social-media platforms, scheduled and published content, edited media using Photoshop, Premiere Pro and After Effects, tracked audience engagement and developed an automated YouTube statistics collection tool.

TECHNICAL TRAINING

Basic Certificate in PLC Programming and Automation - Sri Lanka Institute of Robotics | 2026 - Present (In Progress)
Hands-on focus: PLC fundamentals, Ladder Logic and automation-oriented control concepts.

ENGINEERING SOFTWARE & TOOLS

Design & Simulation: SolidWorks; KiCad; OrCAD; MATLAB; Octave.
Embedded Development: ESP-IDF; Arduino; C/C++; Git/GitHub; Linux.
Data & Automation Support: Python; Pandas; NumPy; SQL; FastAPI; Docker; Postman.

LEADERSHIP & ACTIVITIES

Assistant Secretary - Society of Instrumentation and Automation Technology (SIAT), University of Colombo 2025 - 2026
Supported society administration and technical outreach; served as a Resource Person for EduFusion 2.0 and contributed to Nana Yaathra educational-resource preparation.

Assistant Treasurer - Leo Club of Mahara Youth Leoistic Year 2025/2026
Assisted with financial record-keeping and income/expenditure tracking, and supported project-funding efforts by identifying potential sponsors and funding sources.

ACHIEVEMENTS

1st Place - PAFFREL Civic Tech Challenge 2025 (Team Prajaa)
Top 5 - Hemas AITHON 2026 (Team INNOX)
President's Scout Award - Sri Lanka Scout Association, 2022
School Colours - Ananda College, 2022

LANGUAGES

Sinhala - Native | English - Professional working proficiency | Japanese - Basic; JLPT N5 certified

REFERENCES

Dr. J. L. K. Jayasingha
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