INDUNIL VISHWAJITH

Robotics | Embedded Systems | IoT | Research & Development

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About Me

Mechatronics-focused professional with hands-on experience in robotics, embedded systems, sensor integration, IoT communication, and prototype development. Skilled in ESP32, STM32, Python, and OpenCV-based video analysis, with practical experience gained through industrial training at ACCIMT and academic projects. Completed a final-year research project and co-authored a published research paper. Self-motivated, adaptable, and committed to achieving research objectives, with a willingness to learn new technologies and contribute to interdisciplinary research, particularly in plant phenotyping and agricultural automation.

Education Qualifications

BSc (Hons) in Science and Technology - Specialization in Mechatronics 08/2022 – 09/2026
Uva Wellassa University of Sri Lanka
Academic requirements completed; final results pending.
GPA up to date: 3.86 Academic Awards: Dean's List – Semesters 2, 3, 4, 5 and 6

Research Experience

Design and Development of a 3-DOF Chair-Mounted Motion Simulator with VR Video Synchronization,
Final-Year Research Project | Uva Wellassa University of Sri Lanka | 2026
Supervisor: Dr. A.R.P.C.C.J. Amarasinghe and Ms. R.M.T. Lakmali

- Designed and fabricated a real-scale 3-DOF chair-mounted motion platform using two custom NEMA 34 ball-screw linear actuators for pitch and roll, and a motor-driven three-wheel rotating base for yaw.
- Developed ESP32-based control with sensor interfacing, homing, calibration, and software motion limits.
- Implemented a Python-based GUI for motion control, monitoring, and motion-profile management.
- Integrated Meta Quest 2 VR synchronization using playback data and Wi-Fi TCP communication.

Publications

Technical Assessment and Design Framework for Floating Solar Photovoltaic Systems in Sustainable Reservoir Applications in Sri Lanka,
Proceedings of the International Conference on Computing, Engineering, and Technology (IMPETUS 2026)
W. A. I. N. Vishwajith and T. Lakmali Uva Wellassa University, Badulla, Sri Lanka pp. 256–261
doi: 10.5281/zenodo.20658461

Technical Skills

Programming & Computer Vision

- Python (NumPy, OpenCV, Matplotlib)
- C
- C++ / Arduino

Engineering Software

- SolidWorks & SolidCAM
- MATLAB & Simulink
- EasyEDA & Proteus
- FESTO FluidSIM

Industrial Automation

- Siemens S7-1200 — TIA Portal
- Mitsubishi MELSEC PLC — GX Works2
- XINJE PLC — XINJE Programming Software

Embedded Systems & IoT

- ESP32, STM32, Arduino, PIC16F877A
- Raspberry Pi
- MQTT, Wi-Fi & TCP/IP Communication

Professional Experience

Research & Engineering Intern, *ACCIMT* 06/2026 – 12/2026
Industrial Services Division, Moratuwa

- Supported development, integration, and testing of embedded, sensor-based, and automation prototypes.
- Attended tests of a thermal-camera-based elephant detection and alert system using computer vision.
- Contributed to hospital projects involving ESP32-based IoT communication and PIC microcontrollers.
- Performed circuit testing, equipment troubleshooting, and system integration under the supervision of a Senior Research Engineer.

Engineering Projects

Raspberry Pi-Based Plant Phenotyping & Greenhouse Digital Twin

- Developed Python/OpenCV-based plant image segmentation and green coverage analysis on Raspberry Pi.
- Simulated greenhouse monitoring, automated irrigation, ventilation, and robotic camera control with data visualization.

STM32-Based Maze Solving Robot

- Designed a custom PCB integrating STM32, motor drivers, distance sensors, encoders, and IMU.
- Developed embedded control for navigation, obstacle detection, motor control, and maze solving.

ESP32-Based Nurse Calling System

- Developed an ESP32-based wireless nurse calling system using MQTT for bedside-to-station communication.
- Implemented call, clear, acknowledgement, LED indication, and buzzer alerts for multiple patient beds.

PLC-Based Conveyor & Pneumatic Automation System

- Developed XINJE PLC ladder logic using timers and counters for automated conveyor operation.
- Worked with proximity sensors, encoders, pneumatic actuators, solenoid valves, and control components.

Automated Label Dispenser for Apparel Industry

- Designed and developed an Arduino-based automatic label dispenser to reduce manual handling effort.
- Integrated stepper motor, IR sensor, and LCD for controlled automatic label dispensing.

Patient Number Display System

- Developed a PIC16F877A-based patient number display using 7-segment displays and driver circuitry.
- Implemented non-volatile memory to retain the displayed number after power interruptions.

Professional Certifications

Robotics & Mechatronics (1-3)
Udemy

Languages

Sinhala
Fluent

English
Professional Working Proficiency

Referees

Dr. A.R.P.C.C.J. Amarasinghe,
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