MANUKA MADAWALAGE

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Manuka Madawalage

OBJECTIVE

Seeking a challenging position in Mechatronic Engineering to leverage my expertise in robotics, IoT, AI-driven automation, and embedded system development. Aiming to contribute to innovative projects that integrate intelligent hardware, control systems, and automation technologies to enhance industrial efficiency and smart system performance.

EXPERIENCE

- **MAS Twinery Innovation** *Jun 2024 - Aug 2024*
  Firmware & Hardware Development Intern Sri Lanka
  - Developed STM32-based GUI firmware for Haddenham Desktop Version using C++
  - Designed PCB and firmware for Manifold, Fan, Display, and UI testing jigs; conducted sensor calibration and assembly
  - Updated legacy firmware for Overpressure Valve Testing Gig, improving reliability and test accuracy
- **Sri Lanka Robotics Institute** *Feb 2024*
  PLC Systems Developer (Hands-on Training) Sri Lanka
  - Designed and programmed PLC-controlled systems: Chemical Treatment Plant, Pneumatic Pick & Place, and Elevator Prototype using Siemens Step7 and Mitsubishi STL/Ladder logic

EDUCATION

- **General Sir John Kotelawala Defence University** *Jan 2022 - Dec 2026 (Expected)*
  B.Sc. Eng. (Hons) in Mechatronic Engineering | YGPA: 3.11 Rathmalana, Sri Lanka
- **Kingswood College** *2018 - 2020*
  GCE Advanced Level - Physical Science Stream Kandy, Sri Lanka

PROJECTS

- **AI-Based Personalized Perfume Mixing System** *2025*
  Final Year Project
  Tools: AI/ML, Embedded Systems, IoT
  - Led development of AI-based personalized perfume mixing system, enabling fully automated fragrance customization
  - Integrated intelligent algorithms with precision hardware for dynamic scent composition based on user preferences
- **Socially Assistive Robot for Dementia & Alzheimer's Patients** *Sep 2024*
  Mechatronic Design Project | Team: Ravindu Suraweera, Manuka Madawalage
  Tools: ESP32,ToF Sensor, Raspberry Pi 4, YOLOv5, PD Control, IoT, WhatsApp API
  - Developed a real-time fall detection system using YOLOv5 on Raspberry Pi 4. Implemented autonomous navigation with ESP32, ToF sensors, and PD control for obstacle avoidance. Integrated an IoT alert system via Wi-Fi/WhatsApp API for instant caregiver notifications.
- **Autonomous IoT Greenhouse Control System** *2024*
  Group Project
  Tools: IoT, Sensors, Embedded Systems
  - Built autonomous IoT greenhouse control system, achieving self-regulated climate and irrigation using real-time sensor data
  - Implemented automated environmental monitoring and control for optimal plant growth conditions

- **Industrial Testing Jigs Development** *2024*
  MAS Twinery Innovation
  Tools: STM32, C++, PCB Design
  - Developed firmware for 5 industrial testing jigs, enhancing production quality control and reducing manual testing time
  - Integrated sensor systems and automated testing protocols for manufacturing efficiency

SKILLS

- **Programming Languages:** C/C++, Python
- **Embedded Systems:** STM32 Microcontrollers, Firmware Development
- **Industrial Automation:** PLC Programming (Siemens Step7, Mitsubishi STL/Ladder Logic)
- **CAD & Design:** SolidWorks, AutoCAD, PCB Design
- **Core Competencies:** Robotics, IoT & System Integration, Image Processing, AI-Driven Automation

CERTIFICATIONS

- **Siemens & Mitsubishi PLC Programming with Industrial Practical** *Feb 2024*
  Sri Lanka Robotics Institute (SLIR)
  - Hands-on training in industrial PLC systems programming and implementation
- **SFS SolidWorks Advanced Course** *Jun 2024*
  Professional Certification
  - Advanced training in 3D modeling, assembly design, and mechanical simulation
- **Stanford Machine Learning: Regression & Classification** *Jun 2025*
  Online Certification
  - Comprehensive course covering supervised learning algorithms and practical applications

LEADERSHIP AND VOLUNTEER EXPERIENCE

- **Secretary** 2024 - 2025
  Institution of Mechanical Engineers (IMechE) Student Chapter - KDU
- **Chief Operational Officer** 2024 - 2025
  FSKDU Formula Student Team
- **Secretary Team Member** 2023
  SEDS KDU & ERIC Robotics Club

ADDITIONAL INFORMATION

Languages: English (Fluent), Sinhala (Native)
Interests: Robotics Development, Formula Student Racing, Industrial Automation

REFERENCES

1. **Captain RS Ginige**
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2. **Dushan Wijerathne**
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