Dinupa Devinda

Electrical and Electronic Engineering Undergraduate

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PROFILE

Electrical and Electronic Engineering undergraduate skilled in automation, electronics, and embedded systems. Passionate about solving technical challenges, with additional competencies in computer science and management accountancy.

EDUCATION

Academic Qualifications and Professional Qualifications

2022 – Present **Undergraduate in BSc. (Hons) in Electrical and Electronic Engineering** Malabe, Sri Lanka
Sri Lanka Institute of Information Technology (SLIIT)

2023 – Present **Undergraduate in BSc. in Physical Science** Kelaniya, Sri Lanka
University of Kelaniya

2021– Present Charted Institute of Management Accountants (CIMA) – Part Qualified
- **CIMA Cert BA** Completed | **CGMA Dip MA** In Progress

2012 – 2021 **Secondary Education** Colombo, Sri Lanka
Thurstan College
Advanced Level Results
- Physics – B | Chemistry – C | Combined Mathematics – C | General English -A

EXPERIENCE

June 2024 – September 2024 **Variosystems (Pvt) Ltd.**
Inplant Trainee *– Electronic Manufacturing Services Floor*

- Completed an internship, contributing to automation and electronics projects, including:
  - **Automated Guided Vehicle system -** Built an Arduino-based AGV for autonomous material transport.
  - **SMT Line Conveyor Automation -** Automated SMT line PCB transfers using stepper motors and SMEMA communication.
  - **FLG 201 Flame Treatment Machine improvements -** Replaced UV curing with an automated flame treatment system.

- Gained hands-on experience in production processes on the,
  - **SMT line** - Surface Mount Soldering machines and operations (Loader, Solder printer, SMT machine, Reflow oven)
  - **THT section** - wave soldering machines and operations, hand soldering techniques, selective soldering machines and operations, Quality Checking and Testing with ICT, SAFT, VSFT, OBF and VSST tests. Operation of SPEA 3030 ICT, OBP testing machine functionality, SPEA 4050 ICT test machine functionality.
  - Factory Logix software operation, planning - New Product Introduction (NPI) section, purchasing, HR and finance operations.

SKILLS

- **Engineering & Design Tools**: Proteus (Advanced), Multisim (Advanced), LTspice (Advanced), MATLAB (Intermediate), Simulink (Intermediate), PSIM (Intermediate), AutoCAD (Intermediate), FreeCAD (Intermediate), SolidWorks (Basic), COMSOL Multiphysics (Intermediate), Cisco Packet Tracer (Basic)
- **IDEs:** MPLAB X IDE (Advanced), Eclipse IDE (Intermediate), IntelliJ IDEA (Intermediate), Arduino IDE (Advanced)
- **Programming Languages:** C (Advanced), C++ (Advanced), Java (Intermediate), Python (Intermediate), Assembly (Advanced), VHDL (Basic), SQL (Basic)
- **Databases & Platforms:** Google Colab (Intermediate), Anaconda (Intermediate), Jupyter Notebook (Intermediate), Raspberry Pi OS - Linux-based (Intermediate), Oracle Database (Basic)
- **Frameworks and Libraries:** TensorFlow (Intermediate), OpenCV (Basic), YOLO (Intermediate), CUDA (Basic), NumPy (Basic), Matplotlib (Basic)

PROJECTS

November 2024 – April 2025 **Smart Fish Habitat Management System**

- Developed automated aquarium management using **Raspberry Pi 4 Model B**, integrating **pH**, **temperature**, and **water-level sensors** for precise monitoring.
- Implemented servo-based automatic feeder with **keypad input** for accurate feeding schedules.
- Designed gradual water-change mechanism (**10–20% volume**) and temperature control (**±0.5°C accuracy**) for optimal stability.
- Installed combined **waterfall filtration and activated carbon filtration** systems, maintaining dissolved oxygen and water clarity.
- Integrated **TensorFlow Lite** deep learning model with **Raspberry Pi camera**, achieving >95% accuracy in detecting water clarity, color changes, and contaminants.
- Applied **fuzzy logic** with custom membership functions derived from empirical research on fish-health and water-quality parameters, ensuring adaptive environmental control.
- Added 12V **heater**, TEC1-12706 **Peltier cooler**, and 12V **solenoid valves** for dynamic temperature and water flow management.

June 2024 – Sep 2024 **Automated Guided Vehicle (AGV) Development**

- Designed and built an AGV using an **Arduino Mega**, **Pololu Dual G2 High-Power motor driver (24v14)**, and four **150:1 metal gearmotors (24V, 64 CPR encoders)** for autonomous line-following tasks within the factory.
- Integrated **11 IR sensors** for precise path tracking and **HC-SR04 ultrasonic sensors** for obstacle detection, enhancing safe navigation.
- Selected lightweight **12V, 28AH electric bike batteries**, capable of handling **up to 100 kg load**.
- Fabricated a robust chassis combining aluminum and steel, incorporating **6202ZZ bearings**, caster wheels, and suspension system for stability.
- Project justified by significant annual savings (4,449 CHF / 1.53M LKR) through reducing manual component transportation (318 min/day per employee).

June 2024 – Sep 2024 **Automated PCB Conveyor System**

- Developed an automated conveyor system to replace manual PCB transfers between the **Pick-and-Place (S27HM)** and **Reflow Oven** in SMT Line.
- Utilized **SMEMA 4-pin communication**, two **Arduino Uno** boards, **TB6560 motor drivers**, and **42SH38-4AM stepper motors** (1.8°, 1.68A, 0.36Nm).
- Integrated **SICK WTB4 photoelectric sensors** (15-150mm range) for PCB detection, automating conveyor operation based on real-time PCB presence.
- Achieved seamless synchronization using **SMEMA 4-pin communication** between machines, significantly improving line efficiency and reliability.

June 2024 – Sep 2024 **Automation of Flame Treatment for Pad Printing**

- Developed an automated flame treatment system for the **Teca-Print FLG 201** to eliminate ink fading issues, providing a cost-effective replacement for UV curing.
- Implemented precise linear motion control using an **Arduino Uno**, **TB6560 driver**, **stepper motor**, adjustable potentiometer-based speed control, and mechanical assembly with linear guide rails.
- Validated the solution through rigorous experimentation, demonstrating significantly improved ink adhesion, operational simplicity, and reduced processing costs.

Mar 2023 – June 2023 **Variable Angle Oscillation Fan**

- Designed and implemented a customizable oscillation fan using an **Arduino UNO R3**, **MG995 servo motor**, and a modified rotary regulator, enabling precise manual adjustment of airflow angles (0°–180°).
- Fabricated a stable, 3D-printed servo support structure and ensured compliance with affordability, speed (1300–2100 RPM), energy efficiency (60–80W), and noise constraints (<45 dB).

EXTRA CURRICULAR ACTIVITIES

2024 **SLIIT CODEFEST Algothon Finalist**

2013 - 2021 **U17 U15 U13 Thurstan College Chess Team Member**

- Team Champion - All island School Chess B Division 2013 Under 13
- 1st Runner up - Colombo District Youth Chess Championship 2017 Under 15
- 1st Runner up - Colombo District Junior National Chess Championship 2015 Under 14
- 1st Runner up – Colombo District Youth Rapid Chess Championship 2015 Under 14

2024 **SLIIT Chess Pool Member**

2011-2014 **Member of Junior Scouts and Senior Scouts, Thurstan College**

REFFERENCES

Mr. J.P. Weerasinghe, Consultant Engineer.
No:23, Balasuriya Mawatha, Hapugoda, Kadana.
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Mr. Nimal Jayasundara, General Manager, Selmo (Pvt) Ltd.
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