Banuka Bimsara Liyanage DEHIGAHAWATTE LIYANAGE

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Personal Statement

I'm a third-year engineering undergraduate from the Department of Electronic and Telecommunication Engineering, University of Moratuwa specializing in Electronics and Biomedical Engineering. My interests are mainly in the field of electronics including Digital and Analog Electronics, Robotics and Embedded Systems. Further I have a passion for wearable technologies and eager to learn more. My mission is to apply the engineering principles I learn into practical projects and make an impact in the society.

Education

University of Moratuwa, Sri Lanka Feb 2023- present

- Department of Electronics and Telecommunication Engineering
  Bachelor of Science in Biomedical Engineering CGPA- 3.78/4.0 (up to 4th Semester)
- Relevant Coursework: Electronics Engineering, Signals and Systems, Robotics, Biomedical Device Design, Computer Organization and Architecture, Calculus, Methods of Mathematics, Control Systems, Engineering Design Project, Robot Design, FPGA, Modelling of Physiological Systems.

D.S.Senanayake College, Colombo-07 2019-2022

- G.C.E Advanced Level Examination 2021
  Obtained 3 A's in Physical Science Stream for the subjects Combined Mathematics, Physics, Chemistry with Z-Score 2.20.

Royal Institute International School, Colombo 2008-2018

- G.C.E Ordinary Level Examination 2018
- Obtained 8 A's and B for subjects, including Information Technology and Business Studies.

Awards- University

Dean's List-University of Moratuwa-Faculty of Engineering-(2023-present)

- Semester 2, Semester 4

Finalist of PLEASE Hack competition, selected for top 3 innovations in Sri Lanka.

- Made it to the finals representing Sri Lanka from over 300 teams in South Asian Region.

First Runner's up at Sri Lanka Robotics Challenge-2025

- Sri Lanka's Premeire Robotics Competition with over 100 participants from different universities and our team was able to secure 2nd place in the finals.

Projects

Non-Invasive Glucometer NIRS-Glucometer

The non-invasive glucometer provides a novel approach for diabetes patients by offering painless and continuous monitoring of blood glucose levels. The device uses a near-infrared LED and photodetector to measure blood glucose concentration based on the scattering and absorption of infrared light through the blood.

Robot Design and Competition Robotics Design Project

I was able to be a part of team Pulztrones, the winning team in EN2533 Robot Design and Competition in semester 3, The competition featured tasks such as line navigation, maze-solving, box manipulation, and terrain traversal. The project involved extensive hardware and software development, with the final product demonstrating the capability to autonomously navigate and solve challenges within a specified arena.

Analog Heart-ECG monitor Analog Heart

Analog Heart is an ECG monitoring device developed by Team Meditrones that utilizes analog electronics to accurately capture and process cardiac signals. The project encompasses circuit simulations, printed circuit board (PCB) design, and enclosure development, all aimed at creating a reliable and efficient system for heart activity monitoring.

Holter-Monitor Holter-Monitor

To address the need for a low-cost Holter monitor, we employed a modular design approach, leveraging off-the-shelf components to minimize development time and production costs. The key components of our device include the AD8232 ECG module, ESP32 microcontroller, and an SD card module. This combination provides a reliable and scalable framework for continuous cardiac monitoring.

BioPlastic Revolution– Microplastic Monitoring device with Bioplastic Development

A multidisciplinary project combining biodegradable seaweed-based plastic film development with a water pollution monitoring system using pH and turbine sensors. The system includes machine learning models to predict microplastic levels and a business model integrated into a dynamic web platform for awareness and adoption. One of the Top 3 innovations at the PLEASE Hack competition.

Audio Power Amplifier with 3-Band Tone Controller

Built a Class AB audio amplifier featuring bass, mid, and treble control using analog bandpass filters. The system integrates a preamplifier stage and gain control circuit to enhance audio performance for custom listening preferences.

SLRC 2025 Pulztrones Pulztrones SLRC 2025

An autonomous robot able to perform several tasks such as box manipulation, line following, ramp climbing, sorting, bar code reading and several other tasks given in the SLRC competition and achieved 2nd Place in the Finals.

Omni-Directional Robot(Ongoing) Omni-Directional Robot

An on-going project under EN2160 Electronic Design Realization where we are designing an omnidirectional robot platform to be used in warehouses in industries and I am the project leader. We use SAM3X8E as the main controller and STM32F44RE as the motor controller, further we use mecanum wheels for omnidirectional movement.

Skills

Programming Languages:	Python,C, C++, MATLAB, Verilog HDL,Java
PCB Designing:	Designing multilayered PCBs using Altium Designer.
Microcontroller Programming:	Raspberry Pi, ATmega328p, stm32f44re, sam3x8E, esp32
Product Designing:	3D modeling and design using SolidWorks.
Leadership:	Experience working as a lead in various projects
Languages:	English, Sinhala

Clubs, Societies, and Volunteering

- **Electronic Club**
  Graphic Designer of the PR Branch
- **Young Zoologists' Association Sri Lanka**
  Event Organizing Committee member
- **IEEE Engineering in Medicine and Biology Society**
  Member of the Event Organizing Committee and editorial Co-leader of Brainstorm Biomedical Competition.
- **IEEE(Institute of Electrical and Electronics Engineers)**
  Member, Membership ID 100418806.
- **Finance Committee Member in the event Moraforesight2.0**
  Flagship event organized by the IEEE student branch of UoM.
- **Gavel Club, University of Moratuwa**
  Member and a public speaker of the club.

Certifications

Design of Algorithms Certificate

Covered Divide and Conquer, Sorting and Searching, and Randomized Algorithms and implemented them in Java programming language.

Digital System Design Certificate

Covered fundamentals of digital design, Verilog/System Verilog programming, FPGA implementation, and circuit optimization using online tools.

C for Everyone: Programming Fundamentals Certificate

Covered fundamentals of C programming including the syntax, data structures and some algorithms in C language.

References

Dr. Ranga Rodrigo
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