

Praveen Sumanasekara

dmu.praveen@gmail.com | +94 71 9600222

EDUCATION

ADVANCED LEVEL

Stream: Physical Science

Island Rank: 2

Z score: 3.1840

UNIVERSITY

University: University of Peradeniya

Department of Electrical and Electronic Engineering

Year of study: 4th year

GPA: 4.0 / 4.0

LINKS

GitHub

DMUPraveen

Linkedin

linkedin.com/in/dmupraveen

Youtube

Praveen STEM Discussions

ResearchGate

Praveen Sumanasekara

Google Scholar

D.M.U.P. SUMANASEKARA

SKILLS

PROGRAMMING

Python • C\C++ • JavaScript

Rust • Go • Matlab • Prolog • Haskell

Verilog

SOFTWARE

- Jupyter notebooks
- Pytorch
- GNU/Linux
- Altium Circuit Design
- Autocad
- Webots Robotic Simulation Software
- Matlab and Simulink
- Git and Github
- Inkscape

TECHNICAL SKILLS

- Machine Learning and AI
- Embedded System Design
- Full-Stack Web Development
- Electronic Circuit Design and Soldering
- Data Structures and Algorithms
- Symbolic Computing (Using sympy)
- Scientific Computing and Simulations

OTHER SKILLS

- Compiling Documents in \LaTeX
- Familiar with Overleaf and Zotero

AWARDS AND ACHIEVEMENTS

- **National 2nd** in 2019 G.C.E Advanced Level Physical Science Stream
- **Bronze Medal** in the International Chemistry Olympiad 2022 (Hosted by Turkey) (over 80 participating countries worldwide)
- **National 1st and International 65th** (Out of 16691 participants from 69 countries) place in the IEEEExtreme competition 2023
- **National 1st and International 69th** (Out of 19916 participants from 75 countries) place in the IEEEExtreme competition 2024
- 2013 **Bronze Medal** International Junior Science Olympiad - India (over 70 participating countries worldwide)
- International Mathematics and Science Olympiad (IMSO) (over 50 participating countries)
 - 2013 **Gold Medal and Award for Best Performance**- Philippines
 - 2012 **Gold Medal**- India
 - 2011 **Silver Medal**-Philippines
- **1st place** (out of over 450 participating teams) in MoraExtreme 2023, 2022 and 2021 coding competition organized by the University Of Moratuwa
- **1st place** in ACES Coders 2022 organized by the University Of Peradeniya (team Bitflippers)
- **1st place** in the Robot Simulation Competition Pbots 2019 organized by the University of Peradeniya (Team 404)
- **Top 1000** ranker out of 16,000 international Participants in Google Kickstart competitions (Highest Rank 289th globally)
- **2nd place** in Code Squad 2022 coding competition organized by the University Of Sri Jayawardhanapura (team ReachOut)
- **2nd place** in RoboGames Robot Simulation Competition organized by the University of Moratuwa 2022
- **2nd Runners up** RealHack Hackathon 2024

PUBLICATIONS

1. Ratnayake R. M. K. L. et al. Hyperspectral Unmixing with Spatial Context and Endmember Ensemble Learning with Attention Mechanism, ISPRS Open Journal of Photogrammetry and Remote Sensing, doi: 10.1016/j.ophoto.2025.100086)
2. Wickramathilaka, H. M. K. D. et al. (2023) 'Endmember Abundance Prediction in Hyperspectral Unmixing: The Impact of Endmember Extraction Algorithms and Self-Attention in Autoencoders', 2023 IEEE 17th International Conference on Industrial and Information Systems (ICIIS), doi:10.1109/ICIIS58898.2023.10253564
3. Sumanasekara D. M. U. P. et al. A Detailed Analysis of Datasets Used in HSI, Moratuwa Engineering Research Conference , 2024 Moratuwa Engineering Research Conference (MERCon), doi: 110.1109/ICIIS58898.2023.10253564
4. K. Ratnayake et al., "Comparison of Appliance Signature Classification Methods for Non-Intrusive Load Monitoring," 2024 4th International Conference on Electrical Engineering (EECon) doi: 10.1109/EECon64470.2024.10841878
5. Dissanayake, M. A. K. L. et al. (2024) 'A low-cost, activated carbon-coated, stainless-steel counter electrode for dye-sensitized solar cells', Ceylon Journal of Science, doi: 10.4038/cjs.v53i1.8237

WORK EXPERIENCE

ORISE PVT. LTD.

**| RESEARCH AND DEVELOPMENT
ENGINEERING INTERN**

Worked as a developer of Embedded Software and Statistical Modelling, Inference and Machine Learning Engineer (2023,2024)

**NATIONAL INSTITUTE OF
FUNDAMENTAL STUDIES**

| VOLUNTARY RESEARCH ASSISTANT

Worked as a Voluntary Research Assistant studying Dye-Sensitized Solar Cells (2020)

OTHER ACHIEVEMENTS

- Western Music Practical Exams(grade 8)
- All island winner of Piano Music Festivals (2015,2014,2013)
- Karate Red Belt

REFERENCES

Prof. R. Godaliyadda

Professor

Department of Electrical and Electronic Engineering
University of Peradeniya
roshang@eng.pdn.ac.lk

P. B. Ekanayake

Professor

Department of Electrical and Electronic Engineering
University of Peradeniya
mpbe@eng.pdn.ac.lk

Dr. D.H.S. Maithripala

Senior Lecturer

Department of Mechanical Engineering
University of Peradeniya
smaithri@pdn.ac.lk

6. Ratnayake A. et al. Enhanced SCanNet with CBAM and Dice Loss for Semantic Change Detection. (Accepted for Mercon 2025) arxiv: 10.48550/arXiv.2505.04199
7. Precision Spatio-Temporal Feature Fusion for Robust Remote Sensing Change Detection (Submitted for ICIS 2025), arxiv: arXiv:2507.11523
8. Preprocessing Algorithm Leveraging Geometric Modeling for Scale Correction in Hyperspectral Images for Improved Unmixing Performance (Preprint), arxiv: arxiv.org/abs/2508.08431
9. Mamba-FCS: Joint Spatio- Frequency Feature Fusion, Change-Guided Attention, and SeK Loss for Enhanced Semantic Change Detection in Remote Sensing (Preprint), arxiv: arxiv.org/abs/2508.08232

SELECTED PROJECTS

Voice Controlled Score-Board for Table Tennis | 🎧

This project consisted of a complete design and implementation of a scoreboard which can be controlled via voice command with accompanying wrist-bands to wirelessly communicate with the score-board. I did the complete electronic design and firmware of the wrist band with custom communication protocols and the embedded AI system for the Score-Board.

Twin Rotor Research Platform | 🎧

The Twin Rotor Research Platform is a repository dedicated to the development, control, and research of twin rotor systems with 2 degrees of freedom (2DOF). Responsible for the development of the Interfacing Library, Embedded code and communication protocols for the device.

Circuit King - Component Tester and Circuit Analyzer Tool | 🎧

This is a hardware tool with accompanying software to analyze circuits and test various components as an assistant to an electronic engineer. The tool includes an Oscilloscope (1 Msp/s), A Signal Generator (up to 200 kHz), an IV curve analyzer, a Transistor Characteristic Plotter, a Circuit Bode Plotter, Capacitor, Resistor, Inductor measurement among other things. Developed our own analog circuitry for the analysis. Digital Processing is done using an STM32 microcontroller, while communication with the user application is handled by an ESP32 microcontroller. The User application was developed using the Tauri Framework using React and Rust.

Complete Design of an ECG

This was done as a part of a project for my Bio-Medical Engineering Course. This comprised of the Design of Filters, Amplifiers, and Leg Driven Circuit and Successful measurement of an ECG signal.

3d renderer using Ray-Marching | 🎧

This is a project that explores the concept of Ray Marching. This is similar to Ray Tracing where Rays are cast to the objects to render them in 3d. These rays are also used to calculate the amount of light and shadow on the objects as well.

Micro Service for Getting Emotion from Faces and Text | 🎧

This is an ML microservice that was developed as a component in an app developed for the ACES hackathon. CalmQuest which is an app for helping students connect with therapists and improve the cohesion of therapist-student relationships. It can extract information about Emotions from Faces and Text that is sent through the API endpoints.

A custom Interpreter for the BASIC language implemented in python | 🎧

This is a personal project in which an interpreter for the computer language BASIC was implemented in Python with a custom lexer, parser, etc.

Memory Game Platform for Modelling Learning Dynamics | 🎧 This is a platform for modeling learner dynamics and build probabilistic models based on their performance built as a memory game for data collection and analysis.