RAHAL THARAKA NANAYAKKARA

rahaltharak@gmail.com
www.linkedin.com/in/rahal-nanayakkara/
rahalnanayakkara.github.io

PROFILE

I am a final year electrical and electronic engineering undergraduate, with practical experience and theoretical knowledge in areas covering mechanical, electrical, electronic and computer engineering. I am passionate about learning new things to understand theory and to work on research projects to produce results.

INTERESTS

- Signal Processing
- Control Systems
- Robotics
- Machine Learning

EDUCATION

BSc Engineering (Hons.) Undergraduate **2017 Nov - Present**

Department of Electrical and Electronic Engineering
University of Peradeniya

4.0 / 4.0 GPA with A+ for all modules (Top of the class)

G.C.E Advanced Level Examination **2016**

Trinity College, Kandy, Sri Lanka
3A Passes for Combined Maths, Physics and Chemistry
Z-score : 2.7522
District Rank : 1 out of 2,987
National Rank : 14 out of 33,608

G.C.E Ordinary Level Examination **2013**

Trinity College, Kandy, Sri Lanka
9A Passes

PUBLICATIONS

Integrated Video Based Crowdedness Forecasting Framework with a Review of Crowd Counting Models **2021**

L.B.I.P. Thilakasiri, D.M.P.M. Alwis, **R.T. Nanayakkara**, G.M.R.I. Godaliyadda, M.P.B. Ekanayake, H.M.V.R. Herath, J.B. Ekanayake
IEEE 16th International Conference on Industrial and Information Systems (ICIIS)

Design and fabrication of Handheld CNC Platform for Engineering Teaching **2018**

A. Pallegedara, **R. Nanayakkara**
Annual Sessions of IESL 2018, pp. [589-594]

PATENTS

A multi-sensory fetal movement analyzing device **2022**

D.M.P.M. Alwis, **R.T. Nanayakkara**, L.B.I.P. Thilakasiri, V.K.M. Pandukabhaya, M.P.B. Ekanayake, G.M.R.I. Godaliyadda, J.V. Wijayakulasooriya, R.M.C.J. Ratnayake
Status : Pending

SELECTED PROJECTS

Fetal Movement and Respiratory Pattern Monitoring and Analysis of Pregnant Females (ongoing) **2022**

Final Year Research Project. Monitoring health and wellbeing of pregnant mothers using inertial measurement sensors mounted on a wearable belt.
Technologies: Python, TensorFlow, Arduino
Techniques: Signal Processing, Classical Machine Learning, Neural Networks

CAN Bus Display **2022**

Hobby Project. An ESP32 based device that can read and decode CAN Bus messages and display various parameters on an LCD display
Technologies: CAN Bus, ESP32
Techniques: Embedded C, Hardware Design

Color Sensor for the Visually Impaired **2021**

3rd Year Electronic Product Design Project. Color Identification and Object Detection for the visually impaired via 3D feedback about the surrounding using 3D sound generation.
Technologies: Python, Numpy, OpenCV
Techniques: Spatial Audio Generation, Text-to-speech generation, PCB Designing

Smart greenhouse monitoring and automation system **2021**

3rd Year Embedded System Design Project. Implemented a smart greenhouse capable of monitoring and controlling parameters such as humidity, soil moisture and light.
Technologies: PIC16f873A, MPASM
Techniques: Assembly Programming, PCB Designing

Pulse rate measuring wearable device **2020**

2nd Year Project. A wearable device for estimating the pulse rate of a patient by measuring the transmittance of infrared light through the finger.
Technologies: Arduino
Techniques: Hardware Design, Frequency Analysis

Intelligent CCTV System **2019**

Tracking people and detecting unattended baggage using a neural network based CCTV System. Won awards in multiple hackathons.
Technologies: Python, Numpy, OpenCV, TensorFlow
Techniques: Neural Networks, Data Clustering

Micromouse - Autonomous Maze Navigating Robot **2019**

Autonomous maze navigation robot using custom-made sensors for a "micromouse" maze navigating competition.
Technologies: Arduino, IR Sensors, Gyroscopes
Techniques: Graph Theory, PID Control, Sensor Calibration

Landslide Detection System **2018**

A prototype device which monitors shear strain of soil in landslide prone areas in order to predict landslides. Placed 1st at the 2018 ACES Hackathon
Technologies: Arduino, ESP32, Gyroscopes
Techniques: WiFi communication

AWARDS

Bartholomeusz Prize for Engineering Mathematics **2019**
Awarded for best performance in mathematics modules in the 1st year

Bronze Medal at the Sri Lanka Mathematics Olympiad **2017**
Ranked 5th overall. Conducted by the Sri Lanka Olympiad Mathematics Foundation.

Mahapola merit scholarship **2017**
Awarded by the Government of Sri Lanka for excellent performance at G.C.E (A/L) Examination

Mahinda Ellepola Memorial Medal **2017**
Awarded by Trinity College, Kandy, for academic excellence at Advanced Level Examinations

Subject Prizes for Mathematics, Physics and Chemistry **2015, 2016**
Won in the penultimate school year and final school year

COMPETITIONS

IEEEXtreme 14.0 **2020**
24 hour global algorithmic programming competition
National Rank - 2, World Rank - 68

IEEEXtreme 13.0 **2019**
24 hour global algorithmic programming competition
National Rank - 5, World Rank - 130

MoraXtreme 4.0 **2019**
12 hour algorithmic programming competition among Sri Lankan teams
Ranked 1st out of 150+ teams

ACES Hackathon **2019**
1st place in Travel and Safety Category.
Project : Neural Network based CCTV System for tracking individuals and unattended baggage

SLIIT Robofest **2019**
3rd place in the undergraduate category
Task : Autonomous Maze Navigating Robot (Micromouse)

ACES Hackathon **2018**
1st place in Network and System Category
Project : Landslide Detection System

ADDITIONAL COURSES FOLLOWED

Neural Networks and Deep Learning **2020**
Conducted by DeepLearning.AI through Coursera [Link]

Convolutional Neural Networks **2021**
Conducted by DeepLearning.AI through Coursera [Link]

VOLUNTEERING

Conducted "Introduction to python" webinars **2021**

On behalf of SEDS Peradeniya Chapter for school students and first year undergraduates as part of the "AI in space" webinar series

Conducted Arduino and IOT workshops for school students and teachers **2019, 2021**

Conducted by students and staff members of the Faculty of Engineering, to promote IT education among young students

EXPERIENCE

2022 Aug - 2022 Oct **Vega Innovations**

Trainee Engineer

Project - Implement over the air firmware updates on embedded microcontrollers
- Developing flux weakening algorithms for high speed control of Permeant Magnet Synchronous Motors

2019 Nov - 2020 Feb **Sri Lanka Institute of Nanotechnology (SLINTEC)**

Trainee Engineer

Project - Manufacture of enhanced lead acid batteries with graphene based negative electrodes for improved performance
- Design the electrical power distribution system for a graphene oxide production plant

SKILLS

English Language Proficiency Overall IELTS Band Score of 8.5
Listening 9
Reading 9
Writing 7.5
Speaking 9

Programming Languages Python, Java, C

Hardware Platforms Arduino based, Raspberry Pi

3D Modelling AutoCAD

Numerical Computing MATLAB, Octave, Numpy

Practical Skills Soldering, Wiring, PCB design and development

REFEREES

Prof. Roshan Godaliyadda
PhD (NUS), Bsc. Eng
Department of Electrical and Electronic Engineering
University of Peradeniya
roshangodd@ee.pdn.ac.lk

Prof. Parakrama Ekanayake
PhD (Texas Tech), Bsc. Eng
Department of Electrical and Electronic Engineering
University of Peradeniya
mpb.ekanayake@ee.pdn.ac.lk