

RAHAL THARAKA NANAYAKKARA

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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 practical 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

4 DOF Robot Arm **2022**

Hobby Project. Assembled and programmed a 4 DOF robotic arm based on the "MeArm" robotic arm kit. Capable of performing "pick and place" tasks.

Technologies: Arduino, Servo Motors

Techniques: Forward and Inverse Kinematics, Trajectory Calculation

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

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	2020, 2019
Awarded for best performance in mathematics modules in the 1st/2nd years	
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

WORK EXPERIENCE

2022 Aug - 2022 Oct Vega Innovations

Trainee Engineer

Project - Implement over the air firmware updates on embedded microcontrollers
- Developing and assembling electrical vehicle control units (EVCUs) for prototype vehicles

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/C++, Assembly

Hardware Platforms

Arduino, ESP32, Raspberry Pi, MOS 6502

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

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