

# HESHAN DISSANAYAKE

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## INTERESTS

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- Robotics and Automation
- Algorithmic Programming
- Embedded Systems
- Machine Learning

## EDUCATION

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### University of Peradeniya

Undergraduate in BSc. Engineering(Hons.)

2017 Nov - Present

**GPA: 3.53/4.00**

### Kingswood College ,Kandy

G.C.E. Advanced Level Examination

District Rank - 108, Island Rank - 1200

Physics (A), Chemistry (A), Combined Mathematics (B)

2003 - 2016

**Z-Score: 1.83**

G.C.E. Ordinary Level Examination

A passes for all 9 subjects

## SKILLS

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### Programming Languages

Python, Java, JavaScript, C, C++

### Numerical Computing Packages

MATLAB, Octave, Numpy, TensorFlow

### Procedural programming

ARM Assembly

### Hardware Programming

AVR programming, Verilog HDL

### PCB Designing

Eagle, Altium

### 3D Modelling

AutoCAD, Fusion360

### Version control

git

### Practical Skills

Soldering, PCB design and development

### Languages

English, Sinhala

## ACHIEVEMENTS

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### DataStorm 1.0

2020

2nd Runners up

Task : Credit Card Default Prediction

### 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

**Selected to Faculty of Engineering, University of Peradeniya**

2016

District Rank - 107, Island Rank - 1200

Z - score - 1.83

**9A passes in GCE Ordinary Level**

2013

## PROJECTS

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### **Obstacle robot swarm for swarm robotic project**

2020-2021

- A system of obstacle robots for a swarm robotic platform.
- *Technologies: Python, OpenCV, numpy, MQTT, JavaScript, GRPC*
- *Techniques: Image Processing, stochastic gradient descent, Encryption*

### **Bird Watcher system**

2020-2021

- A system to watch birds from remote streaming devices
- *Technologies: Python, RTMP, OpenCV, MQTT, JavaScript, ffmpeg, nginx, Flutter, Google Vision AI*
- *Techniques: Real time video streaming, Motion Detection*

### **SIIM-ISIC Melanoma Classification**

2020

- Identify melanoma in lesion images.
- *Technologies: Python, Tensorflow, numpy*
- *Techniques: Image Processing, Convolution Neural Networks, Transfer Learning*

### **Convolution Auto Encoder for Person Re-identification**

2020

- Using Auto Encodes for Convolution neural networks to identify a predefined person.
- *Technologies: Python, Tensorflow, numpy*
- *Techniques: Image Processing, Auto encoders, Convolution Neural Networks*

### **Verilog Based CPU**

2020

- Designing of a 32-bit CPU which supports simple instructions with caching.
- *Technologies: Verilog*
- *Techniques: Computer Architecture*

### **8-bit Computer**

2020

- Design and building a 8-bit computer.
- *Technologies: Embedded system, Integrated circuits*
- *Techniques: Computer Architecture*

### **Intelligent CCTV System**

2019

- Tracking people and unattended baggage using a neural network based CCTV System.
- *Technologies: Python, Numpy, OpenCV, TensorFlow*
- *Techniques: Neural Networks, Data Clustering*

### **Micromouse**

2019

- Autonomous maze navigation robot using custom made sensors
- *Technologies: Arduino Microcontroller, IR Sensors, Gyroscope*
- *Techniques: Graph Theory, PID Control Systems, Sensor Calibration*

## **Aerial Sensoring using Hyperspectral Imagery for Soil Moisture Detection** 2018

- Using Hyperspectral images taken from satellites and drones to estimate soil moisture content.
- *Technologies: Python, Numpy, TensorFlow*
- *Techniques: Hyperspectral Data manipulation, Neural Networks*

## **Ambulatory Wound Monitor** 2018

- A small portable sensor that can be embedded in wounds to monitor parameter such as temperature, pH and dressing pressure, in order to monitor the health of wounds
- *Technologies: Arduino Microcontroller, Bluetooth Communication*

## **Analog line Follower Robot** 2018

- Analog Line Follower (PD Controller based)
- *Technologies: Op Amps*
- *Techniques: PD controlling*

## **Landslide Detection System** 2018

- A prototype device which monitors shear strain of soil in landslide prone areas in order to predict landslides.
- *Technologies: Arduino Microcontroller, WiFi Communication*

## **EXTRA-CIRRICULAR**

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Committee member of the Hacker's club of the University of Peradeniya (2020 - Present)

Member of the Music Society of the University of Peradeniya (2018 - Present)

Committee member of Astronomy Club of KingsWood College Kandy (2016)

Member of Science Society of KingsWood College Kandy (2016)

Member of Photography of KingsWood College Kandy (2016)

## **OTHER INTERESTS AND HOBBIES**

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3D modeling and digital art Enthusiast.

Drawing and Painting Enthusiast.

Amature Astronomer.

## REFERENCES

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**Prof. M.A.R.M Fernando**

Head, Dept. of Electrical and Electronic Engineering

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