# HESHAN DISSANAYAKE

Department of Computer Engineering Faculty of Engineering University of Peradeniya Sri Lanka
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## PROFILE

A computer Engineering undergraduate with a motivation to explore the underlying concepts and theories to invent creative solutions to existing problems. I have interests in vision, robotics and the machine learning application in the field of robotics. I have done several interesting projects to explore the real application aspect of my interests. Perform well in my academic and self initiated projects is something that I consider as important. I believe that achieving the solution for a certain problem requires leadership, management, and communication skills, qualities which I develop every day in my life.

## INTERESTS

| | | |
|---|---|---|
| Robotics and Automation | Computer Vision | Embedded Systems |
| Algorithmic Programming | Machine Learning | |

## EDUCATION

**University of Peradeniya** *2017 Nov - Present*
Undergraduate in BSc. Engineering(Hons.) **GPA: 3.6/4.00**

**Kingswood College ,Kandy** *2003 - 2016*
G.C.E. Advanced Level Examination
District Rank - 108, Island Rank - 1200 **Z-Score: 1.83**
Physics (A), Chemistry (A), Combined Mathematics (B)

G.C.E. Ordinary Level Examination
A passes for all 9 subjects

## SKILLS

| | |
|---|---|
| **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, Altim |
| **3D Modelling** | AutoCAD, Fusion360 |
| **Version control** | git |
| **Practical Skills** | Soldering, PCB design and development |
| **Languages** | English, Sinhala |

## PROJECTS

### Group Projects

**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*

**8-bit Computer** 2020

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

**Micromouse** 2019

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

**SIIM-ISIC Melanoma Classification** 2020

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

**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*

**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 Micro controller, 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 Micro controller, WiFi Communication*

### Individual Projects

**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*

**Bird Watcher system** 2020-2021

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

**Verilog Based CPU** 2020

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

## ACHIEVEMENTS

**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*

## EXTRA-CURRICULAR

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

3D modeling and digital art Enthusiast.

Drawing and Painting Enthusiast.

Amature Astronomer.

## REFERENCES

**Prof. Roshan G. Ragel**
Professor, Dept. of Computer Engineering
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**Dr. Isuru Nawinne**
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