

# OSHADHA SANDARUWAN RANAWEERA

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## Education

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### M.Sc. Engineering (Electrical & Electronic Engineering) – Reading

Aug. 2020 - *PRESENT*

University of Peradeniya · *Peradeniya, Sri Lanka*

- Thesis: Energy Cost Optimization of Water Supply Schemes by Using IoT and Machine Learning to Face the Economic Crisis of Sri Lanka
- Course modules covers - Power Systems, Energy Systems, and High Voltage Engineering

### B.Sc. Engineering (Electrical Power Applications) (Honours)

Nov. 2015 - *July 2020*

University of Peradeniya · *Peradeniya, Sri Lanka*

- Graduated with First-Class Honours.
- Final GPA 3.85 out of 4.0
- [Washington Accord] accredited four-year full-time degree.
- [Transcript] [Academic Rank Certificate] [Degree Certificate]

### G.C.E. Advanced Level Examination (University Entrance Exam)

Aug. 2014

Badulla Central Collage · *Badulla, Sri Lanka*

- Physical science stream.
- Three distinction 'A' passes for Combined Mathematics, Physics, and Chemistry.
- Z-Score 1.9833
- [Certificate]

## Research Projects

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### AIoT System for the Management of Water Supply Schemes

July. 2021 - *PRESENT*

National Water Supply & Drainage Board · *Peradeniya, Sri Lanka*

- Development and deploying of a custom embedded hardware system to monitor water treatment utilities
- Development of mobile app along with google Firebase integration of the system
- Development of energy cost optimization system to optimize energy usage in water treatment plants
- Application of machine learning-based approach to optimize the system
- Funding and collaboration: Research & Development unit, National Water Supply & Drainage Board
- [Project Highlights]

### Implementation of Bidirectional Power Electronic Converters for an Electric Three-wheeler

Aug. 2020 - *March 2021*

University of Peradeniya · *Peradeniya, Sri Lanka*

- Implementation of buck-boost bidirectional converter system and programming of the Texas Launchpad controllers to manage the power flow based on the current and voltage readings
- [Project Highlights]

### Early Warning Mobile Application Development for Elephant Collusion Monitoring on Habarana Area Railway Tracks - Sri Lanka

Aug. 2020 - *March 2021*

University of Peradeniya · *Peradeniya, Sri Lanka*

- A mobile application developed to work in conjunction with a convolutional neural network-based system that tracks elephants using camera modules installed at the railway track
- The early warning system will notify the train driver if elephants are crossing the railway track and dispatches alarms based on the signal from remote devices
- [GitHub Source Code]

### Remote IoT device for an Electric Vehicle, Battery Swapping Mechanism with an Optimization Algorithm for a Battery-Swapping Station

March. 2019 - *July 2020*

University of Peradeniya · *Peradeniya, Sri Lanka*

- Light electric vehicle eco-system with battery swapping capabilities
- IoT platform to communicate between vehicle & battery swapping station, optimization algorithm to optimize cost in the battery swapping station were designed and implemented
- Nominated for Eng. E W KARUNARATNE Award for the 2019/ 2020 "Best Undergraduate Project in Electrical and Electronic Engineering" among all Local universities
- [IESL Certificate]

## **FEM Based Modelling and Reliability Analysis of Lightning Protection in Anuradhapura Stupas with Installed Lightning Protection Systems**

March 2019 - July 2020

University of Peradeniya · Peradeniya, Sri Lanka

- Involved analysis of lightning protection systems already implemented in main stupa structures in Anuradhapura
- Performed FEM-based analysis using COMSOL simulation Models
- This project is funded by of Ministry of science and technology and Research-India
- [Commendation Letter]

## **CNC Machine for PCB making and Wood Engraving**

Feb. 2019 - Nov 2019

University of Peradeniya · Peradeniya, Sri Lanka

- Designed and implemented a CNC machine capable of wood & PCB engraving and cutting
- Designed Power Electronic Circuits and heat dissipation Circuitry for the engraving
- [Project Highlights]

## **Smart Wall Socket with Bluetooth, PIC, and Android Integration**

Feb. 2018-Sep 2018

University of Peradeniya · Peradeniya, Sri Lanka

- Implemented a wall socket with USB charging capabilities, remote switching
- Parameters measure and communicate capabilities implemented via Bluetooth
- [Project Highlights]

## **LDR-Based Color Detection Robot Vehicle for Garbage Bin Sorting**

June 2017 - Oct 2017

University of Peradeniya · Peradeniya, Sri Lanka

- Undergraduate project
- An automated robot was designed to collect garbage bins based on their bin color
- Used a developed sensor and signal processing techniques to identify the color to determine the garbage bin type
- [Project Highlights]

## **Publications**

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### **CONFERENCES**

## **FEM Based Modelling and Reliability Analysis of Lightning Protection in Anuradhapura Stupas with Installed Lightning Protection Systems**

IESL Conference 2020 · Sri Lanka

- Authors: Oshadha Ranaweera, Thilok Edirisinghe, Dulaj Dhananjaya, (Prof) M.A.R.M Fernando and (Dr.) Waranatha Abeygunasekara
- [Paper Source]

### **PREPRINTS**

## **Different Lightning Human Interaction Modes: Case Study in Indo-Lanka Heritage Monuments**

IESL Kandurata Chapter- Sri Lanka 2021

- Authors: Oshadha Ranaweera, Thilok Edirisinghe, (Prof) Manjula Fernando, (Dr.) Waranatha Abeygunasekara, (Prof) Sarath Kumara, (Prof) S. Venkatesh
- DOI: 10.13140/RG.2.2.32701.95207

### **UNDER REVIEW**

## **Artificial Intelligence of Things (AIoT) Based Demand Prediction System In A Water Supply Scheme**

International Water Conference – Sri Lanka 2022

- Authors: R.A.O.S. Ranaweera, (Prof) B.G.L.T. Samaranayake

## **Experience**

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**Electrical Engineer (Contract)** · National Water Supply & Drainage Board · Kandy, Sri Lanka

- Development of Technical Specifications for contract documents on Motors, Pumps, AC systems, Electrical Systems, CCTV Systems, Network Systems, Electrical and Mechanical Works of Water Treatment Plants [Appointment Verification]

April. 2021 - PRESENT

**Volunteering Researcher** · National Water Supply & Drainage Board · Kandy, Sri Lanka

Jul. 2021-PRESENT

- Working on the development of a remote monitoring system for water supply schemes in the central province [Verification Letter]

**Teaching Assistant** · University of Peradeniya · Peradeniya, Sri Lanka

Aug.2020-March. 2021

- Conducting laboratory sessions for undergraduates
- Assisting professors in grading lab reports, assignments, and tutorials

- Assigned courses are EE352: Automatic Control, EE358: Electrical Machines, EE353: Discrete Time Control Systems, EE539: Non-Linear and Multivariable Systems  
[Appointment Letter]

**Volunteering Teaching Assistant** · University of Peradeniya · *Peradeniya* · *Sri Lanka*

*Feb. 2020 - Mar. 2020*

- Assisting professors in conducting laboratory sessions for first years

**Electrical & Electronic Engineer (Internship)** · Sri Lanka Telecom (Pvt.) Ltd. · *Badulla* · *Sri Lanka*

*Oct. 2017 - Jan 2018*

- Worked in the regional office on operational and maintenance works related to network systems
- Development of Auto Transfer mechanism to switch generator power
- [Report]

**Electrical Engineer (Internship)** · Ceylon Electricity Board · *Sri Lanka*

*March. 2019 - May. 2019*

- Worked as an electrical engineer in Electricity Generation, Transmission, and Distribution
- [Report]

## Extracurricular Activities

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**Volunteer** · Arunalla Social Welfare program · *Sri Lanka*

*2012- 2020*

- Arunalla is a charitable social service movement
- Conducted over 10 ordinary-level mathematics seminars for school children in Sri Lanka

**Volunteer** · Career Fair 2019 · Faculty of Engineering, University of Peradeniya · *Sri Lanka*

*August 2019*

- Include coordination and resume management of the fresh graduates who attended the job fair

**Treasurer.** Waterboard Employees Welfare (Central Region) · *National Water Supply & Drainage Board* · *Sri Lanka*

*June 2020 - PRESENT*

- Management of donations and assets related to the staff welfare

**Member.** Electrical & Electronic Engineering society · Faculty of Engineering, University of Peradeniya · *Sri Lanka*

*March 2017 – June 2020*

**Manager.** Printing service for university students. University of Peradeniya · *Sri Lanka*

*March 2020 – June 2020*

## Professional Memberships

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**Associate Member** · Institution of Engineers Sri Lanka (IESL) · *Peradeniya* · *Sri Lanka*

*2020 - PRESENT*

The Institution of Engineers, Sri Lanka, is a multidisciplinary professional engineering institution in Sri Lanka.

- Membership Number: AM-26238

**Associate Member** · Engineering Council Sri Lanka (ECSL) · *Peradeniya* · *Sri Lanka*

*2020 - PRESENT*

The Engineering Council of Sri Lanka is Sri Lanka's regulatory authority for registering engineering practitioners. • Membership Number: 213179

## Skills

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<b>Applications</b>	MATLAB, COMSOL, MPLAB®X IDE, Proteus, EAGLE, AutoCAD®, CorelDRAW, Adobe Photoshop
<b>Programming</b>	Python, MATLAB, Flutter, Java, C, PIC Assembly
<b>Word Processing</b>	LaTeX, Open Office, Microsoft Office
<b>Operating Systems</b>	Windows, Linux, Raspbian

## References

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**Eng. (Prof.) M.A.R.M. Fernando**

BSc. Eng., Tech Lic, PhD, CEng,

Int PE, SMIEEE, FIESL

Department of Electrical & Electronic

Engineering,

University of Peradeniya.

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