

OSHADHA SANDARUWAN RANAWEERA

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Education

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

AIoT System for the management of Water Supply Schemes

July. 2021 - *PRESENT*

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

- Development and Deploying of Custom Embedded hardware system to monitor Water treatment plant
- Development of Mobile App along with Google Firebase Integration of the system
- Development of Energy Optimization 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 Electronic 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]

Development of Early Warning Mobile Application for the Elephant collusion monitoring at Railway Tracks at Habarana Area- 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

- Design and implement a CNC machine capable of wood & PCB engraving and cutting
- Design of 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

- Implement a wall socket with USB charging capabilities, remote switching
- Parameters measure and communicate capabilities 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

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

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

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 Services (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

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

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

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

References

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

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

Int PE, SMIEEE, FIESL

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Engineering,

University of Peradeniya.

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