


# BUDDHI WIJENAYAKE

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Kandy-20000, Sri Lanka

## EXPERIENCE

- **University of Peradeniya, Sri Lanka** March 2024 - July 2024  
*Casual Instructor* Peradeniya, Sri Lanka
  - Designed and evaluated lab sessions in Introduction to Programming and Networking for Electrical Engineering (CO: 253).
- **Tutoring**  2019 – Present  
*For Undergraduate and School Students* In Person/ Remote
  - Provided tutoring in Linear Algebra, **Programming in Python, C, and C++**, Signals and Systems, Control Systems, and Advanced Level Combined Mathematics.
- **SwartUp (PVT) Limited** July 2024 - November 2024  
*Embedded System Engineer- Intern* Remote
  - Development of software for a Smart Home system using the **Zephyr RTOS**.
  - Designed and implemented both hardware and embedded software for a Smart City sensor node.
- **Vega Innovations (PVT) Limited** July 2023 - October 2023  
*Electronic Engineer- Intern* Colombo, Sri Lanka
  - Designed and developed a custom Meter for measuring Electrical Conductivity and pH levels, including hardware design and embedded software development.

## EDUCATION

- **University of Peradeniya** 2021 - 2025  
*A Bachelor of Science in Engineering (Honours)* Peradeniya, Sri Lanka
  - CGPA: 3.823/4.00
- **St, Sylvester's College** 2019  
*Advanced Levels* Kandy, Sri Lanka
  - Results: 3A's District Rank-10 Island Rank-107

## PUBLICATIONS


C=CONFERENCE, J.S=IN SUBMISSION JOURNAL, C.S=IN SUBMISSION CONFERENCE

- [C.1] **Wijenayake, Buddhi**; Ratnayake, Athulya; Lelumi Edirisinghe; et al. (2025). **PopStat-COVID19: Leveraging Population Pyramids to Quantify Demographic Vulnerability to COVID-19**. Accepted at ICTER 2025.
- [C.2] Ratnayake, Athulya; **Wijenayake, Buddhi**; Sumanasekara, Praveen; Godaliyadda, Roshan; Herath, Vijitha; Ekanayake, Parakrama. (2025). **Enhanced SCanNet with CBAM and Dice Loss for Semantic Change Detection**. Accepted at MERCon 2025. DOI: 10.48550/arXiv.2505.04199
- [J.S.1] Fonseka, Tharaka; **Wijenayake, Buddhi**; Ratnayake, Athulya; et al. (2025). **Devising PopStat: A Metric to Assess Mortality Dynamics within Demographic Transition**. Manuscript under review for publication in BMJ Global Health.
- [J.S.2] **Wijenayake, Buddhi**; Ratnayake, Athulya; Sumanasekara, Praveen; Godaliyadda, Roshan; Ekanayake, Parakrama; Herath, Vijitha; Wasalathilaka, Nichula. (2025). **Mamba-FCS: Joint Spatio-Frequency Feature Fusion, Change-Guided Attention, and SeK Loss for Enhanced Semantic Change Detection in Remote Sensing**. In the process of submission to IEEE. DOI: 10.48550/arXiv.2508.08232
- [J.S.3] Sumanasekara, Praveen; Ratnayake, Athulya; **Wijenayake, Buddhi**; Rathnayake, Keshawa; Godaliyadda, Roshan; Herath, Vijitha; Ekanayake, Parakrama. (2025). **Preprocessing Algorithm Leveraging Geometric Modeling for Scale Correction in Hyperspectral Images for Improved Unmixing Performance**. In the process of submission to IEEE.
- [C.S.1] **Wijenayake, Buddhi**; Ratnayake, Athulya; Sumanasekara, Praveen; Nichula Wasalathilaka; Mathivathanan Piratheepan; Roshan Godaliyadda; Mervyn Ekanayake; Vijitha Herath. (2025). **Precision Spatio-Temporal Feature Fusion for Robust Remote Sensing Change Detection**. Under Review at ICIIS 2025. DOI: 10.48550/arXiv.2507.11523.
- [C.S.2] Lelumi Edirisinghe; **Wijenayake, Buddhi**; Ratnayake, Athulya; et al. (2025). **Correlation Analysis of Age Structure Metrics and Cause-Specific Mortality: A Global and WHO Regional Comparison Using the Top 5 Causes of Death in 2021**. Under Review at ICAS 2025.


PROJECTS

- **PythonLibrary – proptables: Thermodynamic Properties Library**  
*Tools: Python, pandas, PyPI*
    - Created a Python library to retrieve thermodynamic properties (temperature, pressure, enthalpy, entropy) for R134a and water, simplifying engineering calculations
    - Packaged and published the library, ensuring easy installation and use in research workflows
  - **Solvista: Smart Calculator Interface**  
*Tools: Tensorflow, Python, GUI frameworks*
    - Developed a multi-functional touch-screen smart calculator integrating various mathematical tools, including handwritten numeric operation solving.
    - Delivered an intuitive UI to streamline complex numeric operations
  - **Calm Quest – Counselor Student Management System**  
*Tools: TypeScript, React, Emotion Detection, CSS, HTML*
    - Developed a web-based counselor-student management system for universities, integrating stress management features
    - Implemented emotion detection to monitor student well-being
    - Designed intuitive interfaces to facilitate seamless user interactions
  - **Automatic Tuner – EE322 Mini-Project**  
*Tools: Assembly, Proteus*
    - Designed an automatic tuner system for EE322 mini-project for string musical instruments.
    - Utilized assembly language for microcontroller interfacing


2022–present




2024–2025



2023



2023



SKILLS

- **Programming Languages:** Python, C, C++, R, JavaScript, MATLAB
- **Web Technologies:** React, Node.js, HTML5, CSS3, TypeScript,
- **Data Science & Machine Learning:** TensorFlow, PyTorch, scikit-learn, NumPy, pandas, Matplotlib, Seaborn, Jupyter, OpenCV, Hugging Face Transformers
- **Version Control:** Git, GitHub
- **Operating Systems:** Linux, Raspbian

HONORS AND AWARDS

- **Bronze Medal, Sri Lanka Mathematics Olympiad (SLMO)**
  - **All-Island 4th Place, Chemistry Olympiad Sri Lanka (COSL)**
  - **Bronze Medal, Sri Lankan Physics Olympiad (SLPhO)**
  - **1st Place, IEEEExtreme 17.0 in Sri Lanka**
  - **1st Place, IEEEExtreme 18.0 in Sri Lanka**
  - **Overall Champions, Moraxtreme 2023 Sri Lanka**
  - **3rd Place, ACES Coders 2023**
  - **Champions, Coders V11.0**
  - **Runners Up, RoboGames 2022**

2019

2019

2019

October 2023

October 2024

2023

2023

2024

2022

LEADERSHIP EXPERIENCE

- **Chair Person**  
*IEEE Microwave Theory and Techniques Society*

Oct 2024 – Present



INTERESTS

Music, Tech, Swimming, **Cricket**, Hiking, Traveling.

REFERENCES

1. **Dr. Pantaleon Perera**  
Senior Lecturer, Department of Engineering Mathematics  
Faculty of Engineering, University of Peradeniya, Sri Lanka