

# Rashane Fernando

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## Summary

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I am a 3rd year Bio-medical engineering undergraduate at the University of Moratuwa. I am passionate about electronics, signal processing and circuit design. I am interested in developing innovative wearable devices and using machine learning to improve healthcare technologies.

**Research Interests:** Bio-medical device design, Machine Learning, Signal Processing

## Education

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**University of Moratuwa, Sri Lanka** *Feb 2022 – Present*  
*BSc. Engineering-Honours, Bio-Medical Engineering (UG)*

- GPA: 3.71/4.0
- **Coursework:** Electronic Circuits and Analysis, Electronic Circuit Design, Signals and Systems, Modelling and Analysis of Physiological Systems, Anatomy and Physiology for Engineers,

**St. Peter's College, Colombo 04, Sri Lanka** *Jan 2008 – Feb 2022*  
*G.C.E. Advanced Level: Physical Science Stream- 2021*

- Z-Score: 2.4171
- **Coursework:** Combined Mathematics, Physics, Chemistry

## Experience

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**Teaching Assistant** *Mar 2022 – Mar 2023*  
*Niyasra Education Center* *Moratuwa, Sri Lanka*

- Advanced Level Physics

## Projects

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**EMG-based Muscle Strain Detector**   *2024*

- A portable device made entirely by analog components
- Real-time feedback with LEDs indicating strain levels (low, medium, high).
- Designed and implemented analog filters rectifiers and differential amplifiers.

**PostureGuard – Wearable Posture Monitoring System**   *2025*

- A device which monitors posture in real time and sends alerts.
- Gives haptic feedback as well as notifications through our custom developed PostureGuard app.
- Uses IMU and EMG sensors for detection and MQTT for data transmission.

**Wearable Stress Monitoring Device**   *2024*

- Uses sensor fusion for more accurate stress detection
- Includes sensors to measure heart rate, SpO2, temperature and galvanic skin response.
- Uses an ESP32 12E MCU to process sensor data and compute stress levels.

## Smart Table Mounted Fundoscope

2024

- Captures images using a 20D lens attached to an ESP32 camera module and then transmits it over Wi-Fi to a computer for further analysis.
- ML Model: Trained on 21,000+ retinal images to classify eye disease severity using a CNN architecture.
- This project enhances early eye disease detection and telemedicine, empowering healthcare providers for faster, data-driven decisions.

## Sleep Apnea Detection Device

Ongoing

- Designed to detect sleep apnea events using physiological signals during sleep.
- Explore the possibility of using a machine learning algorithm to give more accurate readings.



## Certifications

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### Machine Learning Specialization

2025





Stanford University, DeepLearning.AI

- Supervised Machine Learning: Regression and Classification 
- Advanced Learning Algorithms 
- Unsupervised Learning, Recommenders, Reinforcement Learning

### Google Cybersecurity Professional Certificate

2024

Google

- Foundations of Cybersecurity 
- Manage Security Risks 
- Networks and Network Security 
- Tools of the Trade: Linux and SQL 

### Senior Certificate in Music Theory

2018

Institute of Western Music and Speech, Sri Lanka

## Achievements

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### Dean's List Honors, Faculty of Engineering, University of Moratuwa

Semester 2

### Finalists, SLIoT Challenge

2025

### Winner, All Island Choir Competition

2019

Organized by International Institute of Music, Speech & Drama, Sri Lanka

## Volunteering Experience

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### IEEE Engineering in Medicine and Biology Society, University of Moratuwa

Event Coordinator

Sept 2024 – Present

Member

Jan 2024 – Sept 2024

### IEEE Industrial Electronics Society, University of Moratuwa

Executive Committee Member

Jan 2025 – Present

### Catholic Students Movement, University of Moratuwa

Vice-President

Oct 2024 – Present

Member

Oct 2023 – Oct 2024

### Classical Music Society, University of Moratuwa

Member

Sept 2023 – Present

## Skills

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**Languages:** English (fluent), Sinhala (native)

**Programming Languages:** Python, C, C++, Java, MATLAB,

**Frameworks:** TensorFlow, NumPy, Scikit-learn

**Softwares:** Altium Designer, Solidworks, LTspice

## References

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**Dr. Pranjeevan Kulasingham**

BSc Eng (Moratuwa), PhD (Maryland)

Senior Lecturer

Department of Electronic and Telecommunication Engineering

University of Moratuwa, Sri Lanka

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**Dr. Rukshani Liyanaarachchi**

B.Sc. Eng. Hons. (Moratuwa), M.Eng (UTokyo), Ph.D (UTokyo)

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