

Mahela Pandukabhaya

Temporary Instructor

Department of Electrical and Electronic Engineering,
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Personal Information

Full Name: Vidana Kankanamge Mahela Pandukabhaya
Date of Birth: 08th October 1997
Gender: Male

Research Interests

Signal Processing	Biomedical Engineering	Electronics	Sensors
Artificial Intelligence	Instrumentation	Automatic Control	Acoustics

Education

BScEng (Hons.) - Electrical and Electronic Engineering Nov 2018 - Dec 2023
Faculty of Engineering, University of Peradeniya. (<https://eng.pdn.ac.lk/>) Peradeniya, Sri Lanka
CGPA: 3.80/4.00 (95%) (First Class Honours)

Primary and Secondary Education Jan 2003 - Sep 2017
Trinity College, Kandy (<https://www.trinitycollege.lk/>) Kandy, Sri Lanka
G.C.E. Advanced Level (University Entrance Examination) Aug 2017
- Physical Sciences (Mathematics, Physics, and Chemistry), Z-score: 1.9141
G.C.E. Ordinary Level Dec 2013

Honours and Awards

- ▶ **Manamperi Award (Nominated) (2024).**
Nominated for the Best Undergraduate Research Project award in Engineering (island-wide, Sri Lanka) by Sri Lanka Association for the Advancement of Science (SLAAS) for the research project “Hand Gesture Recognition and Gait Analysis using Wearable Devices”.
- ▶ **Eng. E.W. Karunarathne Award (Nominated) (2022/2023).**
Nominated for the Best Undergraduate Project in Electrical Engineering (island-wide, Sri Lanka) award for the research project “Hand Gesture Recognition and Gait Analysis using Wearable Devices”.
- ▶ **Dr Tilak Peiris Award for the Best Performance in the General Programme in Engineering (2020).**
Best performance in First Year at Faculty of Engineering (Batch of 2017), University of Peradeniya.
GPA 3.95/4.00 ([Ranked 1st out of 416](#))

Patents

- ▶ **National Patent (Sri Lanka) LK/P/122798 (Pending): “A multi-sensory fetal movement analysing device” (2023).**
Inventors: G.M.R.I. Godaliyadda, M.P.B. Ekanayake, J.V. Wijayakulasooriya, R.M.C.J. Rathnayake, U.H. Delay, J.B. Senanayake, R.T. Nanayakkara, D.M.P.M. Alwis, L.B.I.P. Thilakasiri, V.K.M. Pandukabhaya.

Publications

International Conferences

- ▶ **Quality Assessment of Welding using Regression Analysis of Biomechanical Data.** 2024
 - V.K.M. Pandukabhaya, T.D. Fonseka, R.G.M.S. Kulathunge, G.M.R.I. Godaliyadda, M.P.B. Ekanayake, C.D. Senanayake, P. Gamage, H.M.V.R. Herath.
 - In *Moratuwa Engineering Research Conference (MERCon) 2024. IEEE.* [[DOI](#)]
 - **Best Paper Award** (Technology Management Track), Presenting Author.

Research and Projects

- ▶ **Miniaturization of Wearable Devices.** 2024 - Present
 - Miniaturization of the existing IMU-based full-body wireless wearable device by utilizing flexible PCBs

- ▶ **Non-Intrusive Load Monitoring (NILM).** 2024 - Present
 - Exploration of algorithms for event detection, classification of appliance signatures, and unmixing aggregate power to determine the states of appliances and energy drawn
- ▶ **Assessment of Psychomotor Skills.** 2023 - Present
 - Exploration of algorithms for the quantitative assessment of psychomotor skills based on wearable devices.
- ▶ **Hand Gesture Recognition and Gait Analysis via Wearable Devices.** 2022 - 2023
 - Undergraduate Capstone Project
 - Development of an IMU-based full-body wireless wearable device to capture human body motion
 - Hand gesture classification via binary classification techniques
 - Gait parameter extraction for medical applications through joint kinematics obtained via extended Kalman filtering-based sensor fusion
 - Exploration of grading methods for the quantitative performance evaluation of physical tasks
- ▶ **Fetal Movement and Maternal Respiratory Pattern Monitoring.** 2021 - 2023
 - A collaborative research project with Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Peradeniya, Sri Lanka focusing on the applications related to fetal condition monitoring using IMU-based wearable devices
 - Development of an IMU-based wearable device to monitor maternal abdomen movement for fetal condition evaluation
 - [National Patent \(Sri Lanka\) LK/P/122798 \(pending\)](#)
- ▶ **CalcWizard.** (UG) 2022 - 2023
 - Development of an RTL-based learning aid for arithmetic teaching for primary school students
- ▶ **Diode-based temperature sensor.** (UG) 2020
 - Development of a temperature sensor that investigates the temperature dependence of the VI characteristic of a diode
- ▶ **Phoenix.** (UG) 2019
 - A PID-controlled line follower robot presented for a contest organized by IEEE Student Chapter of University of Peradeniya, Sri Lanka (DEEEP SPEED 2019) - [1st place of out of 80 contestants.](#)
- ▶ **Optical Morse Code Transceiver.** (UG) 2019
 - A multi-threaded, Morse code transmitter-receiver pair based on optical signals

Experience

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| University of Peradeniya
▶ <u>Temporary Instructor</u>
Department of Electrical and Electronic Engineering, Faculty of Engineering. | Peradeniya, Sri Lanka
<i>Jan 2024 - Present</i> |
| Synopsys, Inc.
▶ <u>Electronic Engineering Intern</u>
Applications Engineering, and Research & Development branches (20 weeks)
Highlights: <ul style="list-style-type: none"> - Development of a software solution for random testing of software - Exposure: <i>Python, SystemVerilog, RTL Static Verification</i> - Achievements: Title Winner of LevelUp 2022: Intern Project Presentation Competition | Colombo, Sri Lanka
<i>Jan 2022 - May 2022</i> |

Professional Memberships

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|--|---|
| Institution of Electrical and Electronic Engineers (IEEE)
Member #96249549
Student Member #96249549 | 2019 - Present
2024 - Present
2019 - 2023 |
| Institution of Engineers, Sri Lanka (IESL)
Student Member S-27129 | 2021 - Present |

Volunteering

Events

- ▶ **Member of Organizing Committee** - ACES Pre-Coders v10.0 and ACES Coders v10.0 (Sep-Oct 2023).
An algorithmic programming competition organized by Association of Computer Engineering Students (ACES), Department of Computer Engineering, University of Peradeniya, Sri Lanka.
 Contribution: *Problem design and planning, Coordination of the Contest*
 Exposure: *Data structures and algorithms, computational geometry*

Other Achievements

IEEEExtreme 16.0: An international 24-hour algorithmic programming competition organized by IEEE. [Participation]	Oct 2022
LevelUp 2022: Intern project presentation competition organized by Synopsys, Inc. [1 st place]	Jun 2022
IEEEExtreme 15.0: An international 24-hour algorithmic programming competition organized by IEEE. [Participation]	Oct 2021
IEEEExtreme 14.0: An international 24-hour algorithmic programming competition organized by IEEE. [Top 40 in Sri Lanka, Top 400 in the world]	Oct 2020
MoraXtreme 5.0: A national 12-hour algorithmic programming competition organized by University of Moratuwa, Sri Lanka. [16 th Place]	Oct 2020
ACES Coders 8: A national 12-hour algorithmic programming competition organized by University of Peradeniya, Sri Lanka. [15 th Place]	Mar 2020
Google Hash Code 2020: An international algorithmic programming competition organized by Google LLC. [Participation]	Feb 2020
DEEEP SPEED 2019: A Line Follower Robot Competition organized by the organized by IEEE Student Branch, University of Peradeniya, Sri Lanka. [1 st place]	Dec 2019
IEEEExtreme 13.0: An international 24-hour algorithmic programming competition organized by IEEE. [Top 5 in Sri Lanka, Top 150 in the world]	Oct 2019
ACES Hackathon 2019: An inter-university hackathon organized by University of Peradeniya, Sri Lanka. Idea: Image processing-based detection of freshness of tomatoes. [Participation]	Sep 2019
UoJ Coders v1.0: A national 12-hour algorithmic programming competition organized by University of Jaffna, Sri Lanka. [Participation]	Mar 2019

Skills

Programming	C, C++, Python, Assembly
Hardware	ESP, PIC, Arduino, Raspberry Pi, Altium Designer, Verilog HDL, SystemVerilog
Mathematical Computing	Mathematica, MATLAB, GNU Octave
Circuit Simulation	SPICE, Proteus
CAD	Autodesk AutoCAD, Autodesk Fusion 360, DS SolidWorks
Graphic Designing	LaTeX, Adobe InDesign, Inkscape, Microsoft Office
Languages	English, Sinhala

Other Interests

Music and Acoustics, Astrophysics, Competitive Programming, Photography, Electronic Circuit Fabrication

References

Prof GMRI Godaliyadda

PhD (NUS), BScEng (Peradeniya), SMIEEE, AMIESL

Professor

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Faculty of Engineering,

University of Peradeniya.

Sri Lanka.

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Prof MPB Ekanayake

PhD (Texas Tech), BScEng (Peradeniya), SMIEEE, AMIESL

Professor

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Prof HMVR Herath

Dr.-Ing (Paderborn), MS (Miami), BScEng (Peradeniya), CEng,

SMIEEE, MIESL, MOSA

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