

# THAMISH WANDURAGALA

Department of Computer Engineering, University of Peradeniya, Sri Lanka.

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## ABOUT ME

My research interests lie in developing hardware-software co-design systems to address real-world challenges by designing, optimizing, and implementing innovative solutions.

## EDUCATION

**University of Peradeniya, Sri Lanka** 2019 November - 2024 August

- Bachelor of the Science of Engineering Honours in Computer Engineering GPA: 3.95/4.00

**Trinity College, Kandy, Sri Lanka** 2004 - 2018

- G.C.E. Advanced Level (2018) - 2As, 1B in Physical Science Stream.
- G.C.E. Ordinary Level (2015) - 8As, 1B (English Literature)

## EXPERIENCE

**Temporary Instructor** 2024 October - Present

- Department of Computer Engineering, Faculty of Engineering, University of Peradeniya.

**Visiting Research Assistant** 2023 August - 2024 January

- Supervised by Prof. Yuen Chau at Engineering Product Development Pillar, Singapore University of Technology and Design (SUTD).
- Contributed to a 6G Research and Development Project based on developing Wireless Communication Devices in collaboration with Nanyang Technological University (NTU).

**Casual Instructor** 2022 October - 2024 August

- Supervised weekly sessions for 2nd, 3rd year undergraduates of Department of Computer Engineering, University of Peradeniya for course modules,
  - \* Operating Systems, Signal Processing, Programming Methodology (Based on C Programming Language), Digital Design (Based on circuit building.)

**Voluntary** 2020 May - Present

- Project Nenathambara

Contributed to making a new syllabus for Python programming language beginners and delivered the content to students in schools in Sri Lanka.

## PROJECTS

**Neuromorphic Architecture for Spiking Neural Networks (Group)** | Verilog 2023 December - Present

- A neuromorphic accelerator architecture that is designed to run smaller scale Spiking Neural Networks (SNNs), using a network of nodes optimised for high speeds and low power consumption.
- The accelerator was supported by a RISC-V CPU accommodating general purpose tasks and custom interfacing for the accelerator.
- The synchronous accelerator supported 32-bit arithmetic operations, enhancing the inferencing capabilities of the SNN. Testing was conducted on an Altera FPGA, and performance was evaluated using Synopsys tools, including PrimePower and PrimeTime.
- Contributed to designing the architecture and testing its performance.

**Automated Road-Rule Detector (Group)** | Python, Flutter, Firebase, Nodejs 2022 October - 2023 January

- A hardware device based on Raspberry Pi 3 as the microprocessor which is able to detect road rule breaking severity with an app to visualize collected data.
- Contributed to the Front-End and Hardware.

## **2-bit Intelligent Reflective Surface Prototype** (Group) | Python, Matlab 2023 August - 2024 January

- A 6G Wireless Communication research project focused on Intelligent Reflective Surfaces (IRS).
- Contributed to making the hardware controller of the IRS.

## **8-bit Single Cycle Processor** (Group) | Verilog 2021 November - 2022 March

- An 8-bit single cycle processor with an ALU, register file, control logic, data memory, data cache, instruction memory and instruction cache. A memory hierarchy too was built.

## **ML-based Patient Diagnosis/Care** (Group) | Python, Nodejs, Flutter 2023 May - Present

- An app designed to get symptoms from a user and provide insights and suggestions on potential risks, recommended eating habits and recommendations on type of medical doctor to visit.
- Contributed to the Machine Learning model and the Back-End.

## **Student Results Management System** (Group) | Java, Android Studio 2021 November - 2022 March

- An application developed for undergraduates to keep track of their academic performance, progress.
- Contributed to the Back-End of the system.

## **Smart Inventory Management System** (Group) | Laravel with php, blade, MYSQL 2022 May - August

- Introduced a resource scheduling system to manage resources in the MakerSpace Lab (Department of Computer Engineering, University of Peradeniya).

## **Database System at University Gymnasium** (Group) | MySQL, Php 2021 November - 2022 March

- A fully functional database to organize reservations, cancellations, borrowings and misplacements of equipment at the university gym.

## **ACHIEVEMENTS / EXTRACURRICULAR**

### **Global Robotics Games** (Group) November 2023

- \* 1st place in University Category - Three day competition based on developing robotic controllers for Transformer Robot Soccer League.

### **Aces Hackathon 2023** (Group) June 2023

- \* 2nd place in "Other" category - Two day competition with 40+ participating teams.

### **Aces Pre-Coders 2022** (Group) August 2021

- \* Finalists - A 6 hour coding competition with 70+ participating teams.

### **Offices Held**

- \* President, Ceylon University Dramatic Society, University of Peradeniya. (2022-2023)
- \* Secretary, Aviation Society, Trinity College, Kandy. (2017-2018)

### **Sports**

- \* Baseball Under 19, 17, 15, 13 - Trinity College, Kandy. (2011 - 2017)

## **SKILLS**

**Hardware Programming:** Verilog, ARM Assembly, Quartus, Primetime

**Programming Languages:** Python, Java, C, C#

**Mobile Development:** Flutter, Native Android

**Front End:** HTML/CSS, Bootstrap

**Back End:** Spring Boot, Nodejs

**Data Modeling:** Numpy, Pandas, scipy, sklearn

**Databases:** MySQL, FireBase

**Version Controlling:** Git

## **REFEREES**

**Dr. Isuru Nawinne** | [isurunawinne@eng.pdn.ac.lk](mailto:isurunawinne@eng.pdn.ac.lk)

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