



Prabath Wijethilaka

Electronic and Telecommunication Engineering
Undergraduate
University of Moratuwa
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SUMMARY

I am Prabath Wijethilaka, an undergraduate student in Electronic and Telecommunication Engineering at the University of Moratuwa, skilled in digital electronics and communications.

Interest Areas

I have a strong interest in Digital Design, Computer Architecture, Embedded Systems, Machine Learning, Internet of Things, Full Stack Developing, Computer Vision and Entrepreneurship.

EDUCATION

- **BSc (Hons) Electronic and Telecommunication Engineering** 2022 - Present
University of Moratuwa CGPA/Percentage: 3.64/4.0
- **GCE Advanced Level Examinations** 2012-2020
Dharmaraja College - Kandy Physical Science Stream
 - Z score - 2.5258
 - District Rank - 13, Island Rank - 134

EXPERIENCE

- **Hydrolink | Team Leader** 2023 - Present
Champions - SLIoT Challenge 2023

Hydrolink is an innovative IoT device revolutionizing water tank management. We developed this project and subsequently received a grant from the World Bank to manufacture a small batch of units and create a market-ready product. Through this experience, I gained significant skills in business and project planning, as well as product marketing. Ultimately, we launched our website, www.hydrolink.lk, and won the championship at the SLIoT Challenge 2023. *For more details .*

PROJECTS

- **Project Hydrolink - Champions | SLIoT Challenge 2023** 2023 - Present
A Complete IoT Device Revolutionizing Water Tank Management www.hydrolink.lk
 - A complete IoT device revolutionizing water tank management.
 - Arduino IDE, ESP Microcontroller, Google Firebase, Flutter, SolidWorks, Altium
- **Hardware accelerator for a Vision Transformer-based malware detection system on a VEGA Processor** 2024-Present
Accelerating ViT-based malware detection on edge devices with VEGA AS1061 Processor, based on RISC-V ISA.
 - This project aims to deploy a ViT-based malware detection system on an edge device equipped with the VEGA AS1061 Processor
 - Stage 1 focuses on proposing a novel acceleration IP to enhance the ViT model's inference performance on the VEGA Processor, ensuring effective malware detection in real-world scenarios.
- **Processor Design and Implementation on a FPGA** July 2024 - Present
Design and implement a single-cycle processor
 - Stage 1: 32-bit non-pipelined processor: single cycle processor
 - Stage 2: 32-bit pipelined processor design (using System Verilog)
 - Stage 3: Associative mapped cache memory
- **Design and Implementation of the NIOS II Soft Processor on an Altera Max 10 FPGA.** July 2024 - Present
Designing a NIOS II processor system on an Altera Max 10 FPGA and developing a demo application.
- **Gazebo Robot Simulation** May 2024
Robot Simulation Project using ROS2 Humble and Gazebo Repository
 - Map a room and navigate the robot from one location to another, avoiding obstacles along the way. Additionally, perform object tracking.
 - Gazebo, Ros2, Ubuntu, OpenCV
- **Modular Software Development Project** Jan 2024 - May 2024
Developed a full-stack web application as a submodule within a main company. Repository
 - Integrating backend functionalities with frontend components to streamline operations.
 - Spring boot, Java, MongoDB, React, Postman, Rest API

- **Point-to-Point Communication Design project** Aug 2023 - Dec 2023
We implemented a secure and reliable point-to-point digital wireless communication system using SDR. Repository
 - Our achievements include the successful transmission and reception of diverse data types, such as images, text, and real-time audio.
 - Python, GNU radio, MATLAB
- **Industrial Portable Water Quality Measurement Device** Jan 2024 - May 2024
Developed an industrial portable water quality measuring device using sensor technologies and a Mobile app. Repository
 - Capable of accurately measuring four key parameters: pH, Turbidity, Conductivity, and Temperature.
 - Arduino-IDE, ESP-Microcontroller, Google Firebase, Flutter, SolidWorks, Altium
- **UART Communication System Implementation on FPGA using Verilog** May 2024
Implemented and tested a UART communication system on an FPGA using Verilog. Repository
 - Utilized Quartus Lite for FPGA development and integrated Raspberry Pi for data input.
 - Verilog-HDL, Quartus Lite, FPGA, Raspberry-pi, Python
- **Analog Portable Audio Amplifier** Aug 2023 - Dec 2023
We have designed a Portable Audio Amplifier using only analog components. Repository
 - Our device is capable of amplifying audio input from any audio-generating device through three main sub-circuits: preamplifier, tone controller, and power amplifier. We've implemented the Baxandall passive tone controller.
 - Simulink, Proteus, LT-Spice, Altium, Solidworks
- **Machine Learning Projects**
Repository
 - DiabetesAI-Webproject
 - SMS spam detector
 - Stock prediction
 - Breast Cancer Wisconsin Diagnostic Predictor
 - Cardiovascular Disease Predictor

AWARDS

- **Champions | SLIoT Challenge 2023 - All island IoT competition** 2023
 - Hydrolink - A Complete IoT Device Revolutionizing Water Tank Management
- **Stage 2 (Top 20) | DVCon India 2024 - International Design Contest** Ongoing
 - GateMasters - Design and implement a hardware accelerator for a Vision Transformer-based malware detection system on a VEGA Processor.
- **Finalist | Brainstorm 2024** Ongoing
 - PulseX - A wearable device that utilizes machine learning and Electrooculography (EOG) signals to track a driver's state of awareness in real-time
- **Semifinalist | Idealize 2024** Ongoing
 - Hydrolink Mobile App - A Mobile application for a comprehensive IoT device revolutionizing water tank management using Flutter and Firebase.
- **Dean's List** 2023
 - Semester 2

SPECIALIZATIONS AND CERTIFICATIONS

- **Machine Learning Specialization**
Deeplearning.AI - Coursera
- **Introduction to FPGA Design for Embedded Systems**
University of Colorado Boulder - Coursera
- **FPGA Softcore Processors and IP Acquisition** Ongoing
University of Colorado Boulder - Coursera
- **Hardware Description Languages for FPGA Design**
University of Colorado Boulder - Coursera
- **AAT Level 3 Completed**
Association of Accounting Technicians of Sri Lanka
- **Diploma in English**
Esoft Metro Campus - Sri Lanka
- **Diploma in IT**
Esoft Metro Campus - Sri Lanka

EXTRA-CURRICULAR AND VOLUNTEERING

- **Social Media Sub-Coordinator** *Aug 2023 - Present*
Electronic Club - University of Moratuwa
- **Department Batch Representative** *Jan 2024 - Present*
Department of Electronic and Telecommunication Engineering - University of Moratuwa
- **Finance Committee member** *Mar 2023 - Aug 2023*
IEEE Society University of Moratuwa - project "Mora Foresight 1.0"
- **Event Sub-Committee member** *July 2023 - Aug 2023*
EXMO - University of Moratuwa
- **Finance Committee member** *Aug 2022 - Dec 2022*
AIESEC Society University of Moratuwa - project "Rooted 1.0"
- **Junior Prefect** *Jan 2015 - Dec 2015*
Dharmaraja Collage - Kandy
- **President of Collage Hosteler's Society** *Jan 2017 - Dec 2017*
Dharmaraja Collage - Kandy
- **Volunteering in Sasnaka Sansada** *2021 - 2022*
Teaching experience with Volunteering in "Ganitha Saviya" Project
- **Co-Founder and Advisor in Prakampana Sansada** *2022 - present*
Social Service and Education Development Society

SPORTS AND ACTIVITIES

- **Sri Lanka University Games Championship 2023**
University Baseball Team - University of Moratuwa
- **Participated STRIDIAN'23**
Mora Hiking Club - University of Moratuwa
- **Participated as a delegate in LEAD CS 8.0 - Leadership Development Program**
AIESEC Society - University of Moratuwa
- **Captain of the college under 17 volleyball team**
Dharmaraja College - Kandy
- **Obtained a 'Merit' for Hockey on Annual "Colors Nite".**
Dharmaraja College - Kandy
- **Member of the college Baseball, and Hockey team**
Dharmaraja College - Kandy

TECHNICAL SKILLS

- **Languages:** Java, C, C++, VHDL, Verilog, SystemVerilog, Python, SQL, React, JavaScript, Dart, HTML, CSS
- **Developer Tools:** Quartus, Vivado, MATLAB, Git, Altium Designer, SolidWorks, Android Studio, Gazebo, Docker, VS Code, Postman
- **Frameworks:** Spring Boot, Flutter, Arduino, Scikit-learn, ROS2
- **Cloud/Databases:** Firebase, Mongo DB, Microsoft Azure, SQL
- **Operating Systems:** Windows, Linux, Ubuntu, Raspbian
- **Soft Skills:** Problem-Solving, Team Leadership, Project Management, Teamwork, Public Speaking, Finance and Account management, Strategic Decision-Making, Digital Marketing, Teaching, Photography, Videography

REFERENCES

- **Ajith A. Pasqual,**
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