Gishan Damindu Kalasinghe

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PERSONAL STATEMENT

As a self-motivated final-year undergraduate with a solid foundation of knowledge, I am passionate about tackling real-world problems and enthusiastic about making contributions to the fields of **Software Engineering, Computer Vision, and Machine Learning**

EDUCATION

University of Moratuwa Moratuwa, Sri Lanka
B.Sc. Engineering (Hons.) in Electronic and Telecommunication Engineering; GPA:3.44/4.0🔗 *Mar 2021 - Present*

- **Neural Networks and Fuzzy Logic, Deep Learning for Vision, Data Structures and Algorithms, Image Processing and Machine Vision, Pattern Recognition, Robot Design and Competition, Fundamentals of Computer Organization and Design, Signal and System, Linear Algebra, Applied Statistics**

Rahula College Matara, Sri Lanka
GCE Advanced Level - Physical Science Stream | 3A's *Jan 2016 - Aug 2019*

- *Z-Score 2.1224 | Island rank:50 | Distric Rank:5*
- *Combined Mathematics, Physics, Chemistry*

Coursera Online
Object Oriented Programming Specialization (University of London)
Databases and SQL for Data Science with Python(IBM)
Foundations of Data Structures and Algorithms Specialization (University of Colorado Boulder)
Deep Learning Specialization (DeepLearning.AI)
Machine Learning Specialization (University of Stanford)

EXPERIENCE

Software Engineer (Full-time) Dec 2023 - May 2024
NCINGA PTE LTD

- **WebRTC Full-Stack Application:**
  * Developed scalable back end with **Spring Boot (Java)** and **Go**.
  * Built front end using **React.js** and **Next.js** for cross-device UX.
  * Implemented **Keycloak** for secure authentication and **MySQL** for data management.
  * Deployed application using **Docker** containers on **AWS EC2** for testing and debugging.
  * Designed UI/UX with **Figma** and **MUI**.
- **Cisco Meraki Captive Portal:**
  * Developed portal using **Cisco Meraki** technology for secure network access.
  * Utilized **MongoDB** for data storage and **React.js** for UI design.
  * Applied **Express.js** for server-side logic and routing.

Visiting Instructor (Part-time) Sep 2023 - Oct 2023
University of Moratuwa *Moratuwa, Sri Lanka*
- *Supervised* **Robot Design and Competition** *module.*

PROJECTS

A Gamified Energy Conservation Web Application Platform 🔗 *Mar 2024 - Jun 2024*

- Developed a gamified platform using **ReactJS**, **Spring Boot**, and **Unity** to promote energy conservation through interactive features.
- Designed real-time game mechanics and a leaderboard to reflect and reward energy-saving actions, enhancing user engagement.
- Integrated an educational questionnaire and player profiling to combine learning with an engaging gaming experience.

Microservices-based Product Management System - CRUD Spring Boot Web Application 🔗 *Ongoing*

- Developed a **CRUD backend** using microservices architecture to handle product management, orders, and user data.

- Integrated **MySQL** as the database and implemented secure authentication with **Keycloak** and **Spring Security**.

London Stock Exchange Group Model Flower Trading Platform Project 🖸 *Aug 2023*
- Created a model flower trading platform using OOP in C++.

Open-Source LLM RAG Chatbot 🖸 *May 2024*
- Developed a chatbot leveraging open-source large language models (LLM) and retrieval-augmented generation (RAG) to answer questions from provided documents.
- Utilized Python, LangChain, ChromaDB, PyPDF, and Pytest, with models including the llama3 model.

Language Translation with Transformer Models 🖸 *Dec 2024*
- Fine-tuned the mBART transformer model using Hugging Face's `transformers` library for English-to-Sinhala translation, implementing multilingual tokenization, evaluation, and model optimization techniques.

Product Detection in Densely Packed Scenes (Computer vision, Machine learning) 🖸 *Nov 2023*
- Computer vision models were developed for detecting and classifying densely packed retail items in global supermarkets using the SKU-110K dataset.
- Contributed to the advancement of retail technology by addressing complex object detection challenges.

CNN for image classification 🖸 *Nov 2023*
- A fundamental image classifier was built using a Convolutional Neural Network (CNN), exclusively utilizing the PyTorch framework for model construction, and working with the CIFAR-10 dataset.

Micro Mouse Robot Design(Robotics) 🖸 *Sep 2023*
- We built a Micro-Mouse robot. The task was to solve a given maze within the least amount of time. The main algorithm we focused on was "flood-fill" algorithm and we used custom PCBs.

Dual Robot System for Exmo'23 Exhibition🖸 *July 2023*
- The primary robot hosts the secondary robot, enabling seamless collaboration and task diversification
- Their collective proficiency in tasks like line and dotted line following, maze solving, color detection, and box grabbing is enhanced through advanced communication capabilities

Virtual Robot Using Webots and Fully Automated Robot for Given Specific Task🖸 *April 2023*
- This robot is designed for tasks such as line following (dotted, segmented, and colored), wall following (segmented and normal), lifting elements, and ramp climbing. It is coded using C++.
- Developed an autonomous robot that excelled in line maze navigation, curved wall following, and blind box navigation.

Autonomous line following and obstacle avoiding robot 🖸 *April 2023*
- For SLTC Robotic Competition designed maze solving, line following, Object avoiding, Color detection and communicable autonomous dual robot system.

RISC-V Architecture based Processor in FPGA 🖸 *Ongoing*
- Implementing a processor on an Intel Altera FPGA board based on the RISC-V micro-architecture and instruction set

UART Transceiver Implementation in FPGA 🖸 *Jun 2023*
- Used Verilog hardware description language (HDL) to Design.

PestSense | SPARK Challange 22/23 🖸 *June 2023*
- This innovative project represents a sophisticated insect monitoring and control system with the aim of efficiently tracking and managing insect populations.
- The system employs observation, analysis, and identification processes to determine the precise type and quantity of insecticide necessary for crop application.

Smart Bicycle Speedo Meter 🖸 *Mar 2023 - Jun 2023*
- Delivers real-time data on speed, temperature, humidity, and time for informed cycling decisions.
- Incorporates a safety horn system to reduce accident risks and ensures precise data processing for a smoother and safer cycling experience.
- For PCB and enclosure design, I used Altium and SolidWorks, respectively.

Awards and Scholarships

Champions | SPARK Challange 22/23 - Electronic Engineering Undergraduate Competition *Jun 2023*
This innovative project aims to create a sophisticated insect monitoring and control system.

5th Place | Technobots 2023 - Robotics Competition hosted By SLTC University *May 2023*
Fully autonomous robot pair.

4th Place | Sparklink1.0 2023 - Digital Design Competition hosted by University of Ruhuna *Sep 2023*
The competition involves designing digital circuits using the Verilog HDL language.

Mahapola Higher Education (Merit) Scholarship *Aug 2019*
For outstanding performance in GCE A/L Examination.

Leadership Experience

Electronic Club - University of Moratuwa
Manager Operation *Aug 2023 - Present*
- Chairperson : ENTC Abhina'23 Entertainment event

Committee member *Aug 2022 - May 2023*
- Co chair: ENTC Padura'22 event
- Collaborated with the chairperson in making crucial decisions, played a key role in organization management, and ensured the seamless operation of its activities.

Department Coordinator - Exmo'23 Exhibition
Largest technological exhibition in Sri Lanka hosted by University of Moratuwa *Aug 2022 - May 2023*
- Managed a team of effectively, promoting teamwork and achieving department goals.
- Made important decisions to solve problems and improve department processes.

Sri Lankan Robotics Challenge(SLRC) 22/23
Organizing committee member *Aug 2022 - Mar 2023*
- Contributed to arena preparation and event management tasks.

Leo Club - University of Moratuwa
Committee member *May 2021 - Dec 2022*
- Organized charity programs involving seminars to educate school students and conducted initiatives for essential supplies distribution.

Team Leader - Rahula College Debate Team
- Participated in several debate tournaments all around the island *Jun 2016 - Aug 2018*

Skills Summary

Languages: English , Sinhala (native proficiency)

Programming Languages: Python, Java, Java Script, C++, Go, C, Matlab

Software: PCB Designing (Altium), Enclosure designing (Solidworks), Electronic simulation (Proteus), FPGA designing (Quartus Prime, Vivado)

Frameworks: Tensorflow, PyTorch, Spring Boot, React.Js, Express.Js

Sports: Athletics, Volleyball

References

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