Kanishka Gunawardana

Department of Computer Engineering, University of Peradeniya, Sri Lanka
+94 76-2152049 | kanishkagunawarthana@gmail.com | linkedin.com/in/kanishka | github.com/KATTA-00

Profile

I am an enthusiastic 3rd year Computer Engineering undergraduate with a fervent interest in Computer Architecture, Embedded Systems, Computer Vision, and Machine Learning. Driven by a passion for leveraging cutting-edge technology to tackle complex challenges and create impactful solutions.

Education

University Of Peradeniya Nov. 2021 – Present
Undergraduate in B.Sc. Engineering(Hons.) Computer Engineering ***Current GPA: 4.0/4.0***
Field Rank: **1/90**

Dharmaraja College Kandy Nov. 2006 – Aug. 2019
G.C.E. Advanced Level Examination ***Z-score: 2.5661***
National Rank - **149/19508**, District Rank - **11/1189**

Experience

Undergraduate Teaching Assistant Jun. 2022 – Present
Department of Computer Engineering, University of Peradeniya
GP106: Computing, CO222: Programming Methodology - Supervised 2hr long weekly lab sessions based on Python and C programming languages. Assisted in quiz creation and lab material preparation and designing course projects.

Project Nenathambara Sep. 2023 – Present
Department of Computer Engineering, University of Peradeniya
Led University of Peradeniya's outreach program for Project Nenathambara, organizing workshops on Arduino and robotics for underprivileged students in Sri Lankan schools.

Selected Projects

Impact Tracking System For Athletes | *Group* | Nov. 2023 – Mar. 2024
- Developed a real-time head impact monitoring system for contact sports using wearable devices and desktop dashboards, facilitating prompt concussion identification, post-session data transmission, and comprehensive analytics for player safety and informed decision-making.
- Contributions: Designed and developed wearable device hardware and firmware, established the centralized hub and local area network, contributed to backend API development, and handled deployment on AWS infrastructure.
- Technology: **Arduino, Raspberry PI, MQTT, Python, Express.js, MongoDB, AWS**

A Field-Based Approach for Quantifying Plant Leaf Color | *Group* | Aug. 2023 – Nov. 2023
- Developed a mobile application with a backend that utilizes Image Processing and Computer Vision to objectively quantify plant leaf colour by analyzing information extracted from captured leaf images.
- Contributions: Developed the backend API using FastAPI and contributed to image preprocessing, including segmentation using deep learning techniques (Mask R-CNN), to accurately quantify plant leaf color.
- Techniques: Image Segmentation using Mask R-CNN, Colour Extraction, K-mean Clustering
- Technology: **Python, OpenCV, Pytorch, FastAPI, Flutter**

Obstacle Robot Swarm for Swarm Robotic Project | *Group* | Feb. 2024 – Present
- Leading the development and firmware update of obstacle robots with collision avoidance algorithms for the swarm robotics platform.
- Integrating obstacle robots with the existing swarm platform, enabling studies of dynamic obstacle scenarios.
- Technology: **Arduino, Python, Java, MQTT, OpenCV**

8-bit Single-cycle Processor | *Group* | Mar. 2023 – Jun 2023
- Designed and implemented an 8-bit single-cycle processor architecture in Verilog HDL to emulate a MIPS inspired ISA, enabling functionality for arithmetic, logic, data transfer, and control flow operations.
- Built a comprehensive testbench for verification, ensuring processor functionality and timing constraints.
- Technology: **Verilog-HDL, GTKWave**

Sri Lankan Export-Grade Mango Fruit Identification | *Group* Mar. 2024 – Present

- Developing a computer vision system to grade the quality and maturity level of Sri Lankan export-grade mangoes by isolating mango images from background.
- Incorporating both traditional image processing techniques and advanced deep learning approaches for segmentation and classification.
- Techniques: Image Segmentation, Contouring, Spatial and Frequency domain filtering
- Technology: **Python, OpenCV, TensorFlow**

Department Space Management System | *Group* | Mar. 2023 – Jun. 2023

- Developed a web application using Spring Boot and React for efficient reservation management of shared spaces in a university department, including waiting list functionality and user hierarchy for access control.
- Contributions: Developed the backend API using Spring Boot and integrated MySQL database for efficient data management and retrieval.
- Technology: **Java, Spring Boot, React.js, MySQL**

Achievements

SLIot Challenge 2023 | *Sri Lankan Biggest IOT Competition* | *Team: IMPAX* Mar. 2024

- 2nd Runners up(Out of 100+ Teams) | *Organized by University of Moratuwa in collaboration with SLT-MOBITEL and IESL*

MoraXtream 8.0 | *12 hour algorithmic programming competition* | *Team: Five4Five* Nov. 2023

- National Rank - 4(Out of 400+ Teams) | *Organized by the IEEE Student Branch of the University of Moratuwa*

IEEEXtreme 17.0 | *24 hour algorithmic programming competition* | *Team: Five4Five* Nov. 2023

- Global Rank - 374(Out of 16500+ participants), National Rank - 24(Out of 330 Teams)

ACES Coders v10.0 | *12 hour algorithmic programming competition* | *Team: Five4Five* Oct. 2023

- National Rank - 12(Out of 350+ participants) | *Organized by the Association of Computer Engineering Students of the University of Peradeniya*

ACES PreCoders v10.0 | *6 hour algorithmic programming competition* | *Team: Five4Five* Sep. 2023

- University Rank - 2(Out of 50+ Teams)

ACES Hackathon 2023 | *An inter-university hackathon organized by the ACES* | *Team: LearnLink* Sep. 2023

- LearnLink - An innovative online marketplace for buying and selling books

Certificates

Machine Learning Specialization - Stanford University & DeepLearning.AI(Coursera) Sep. 2023

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

Engineering Drawing and 3D Modelling using AutoCAD Mar. 2021

Technical Skills

Languages: Python, C/C++, Java, SQL, JavaScript, Verilog HDL, ARM assembly
Frameworks: Arduino, Express.js, Spring Boot, FastAPI
Libraries: OpenCV, NumPy, Matplotlib, Pandas, Pytorch, TensorFlow
Developer Tools: Git, Docker, Quartus, GTKWave, AWS

Extra-Curricular Activities

Head of Web Development - Robotics Society - University of Peradeniya Sep. 2023 - Present
Executive Committee Member - Robotics Society - University of Peradeniya Dec. 2022 - Sep. 2023
Member of Rotaract Club of University of Peradeniya Dec. 2021 - Present

References

Prof. Roshan G. Ragel | ***roshanr@eng.pdn.ac.lk***

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

Dr. Isuru Nawinne | ***isurunawinne@eng.pdn.ac.lk***

Senior Lecturer, Department of Computer Engineering, Faculty of Engineering, University of Peradeniya, Sri Lanka.