

Kanishka Gunawardana

Department of Computer Engineering, University of Peradeniya, Sri Lanka

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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

Casual Instructor

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.

Volunteering

Sep. 2023 – Present

Project Nenathambara - 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 impact monitoring system for contact sports using wearable devices, enabling prompt concussion identification, post-session data transmission, and comprehensive analytics for player safety and informed decision-making.
- Wearable devices transmit real-time impact data to a central hub, connecting live dashboards via a local area network. Subsequently, the data is securely uploaded to a cloud-based backend for player analysis.
- 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.
- Techniques: Image Segmentation using Mask R-CNN, Colour Extraction, K-mean Clustering
- Technology: **Python, OpenCV, Pytorch, FastAPI, Flutter**

8-bit Single-cycle Processor | Group | 🌐



Mar. 2023 – Jun 2023

- Designed and implemented an 8-bit single-cycle processor architecture in Verilog HDL, supporting arithmetic, logic, data transfer, and control flow instructions.
- Built a comprehensive testbench for verification, ensuring processor functionality and timing constraints.
- Technology: **Verilog-HDL**

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**

- Sri Lankan Export-Grade Mango Fruit Identification** | Group Mar. 2024 – Present
- Developing a computer vision system to classify 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.
 - 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*
- IEEE Xtreme 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.