# Kanishka Gunawardana

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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.*

## Projects

**Impact Tracking System For Athletes(IMPAX)** | *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, 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 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 photos.
- 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**

**Database for Cricket Statistics** | *Group* | Mar. 2023 – Jun. 2023

- Designed and developed CricLive, a comprehensive database for cricket statistics, enabling users to store, manage, and analyze data on players, teams, and matches.
- Technology: **Node.js, Express.js, React.js, MySQL, WebSocket**

## Achievements

**SLIot Challenge 2023** | *Sri Lankan Biggest IOT Competition* | *Group* 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* | *Group* 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* | *Group* 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* | *Group* 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* | *Group* Sep. 2023

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

**ACES Hackathon 2023** | *An inter-university hackathon organized by the ACES* | *Group* Sep. 2023

- LearnLink - online platform serve as market place to sell books

## 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

## 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

## References

**Prof. Roshan G. Ragel** | ***roshanr@eng.pdn.ac.lk***
Head of Department, Department of Computer Engineering, Faculty of Engineering, University, Peradeniya, Sri Lanka.

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