

ULINDU PABASARA DE SILVA

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STATEMENT

Dedicated and versatile professional with a robust academic foundation in Mathematics, extensive experience in computer vision and NLP applications, and a proven ability to lead and collaborate with diverse local and international teams. Actively seeking opportunities for growth and impactful contributions.

EDUCATION

University of Moratuwa, Moratuwa

June 2021 – Present

B.Sc. Honours in Electronic and Telecommunications Engineering

CGPA: 3.86/4.00

Expected Graduation: 06/25

Selected Coursework: Image Processing and Machine Vision, Pattern Recognition, Deep Learning for Vision, Data Structures and Algorithms, Probabilistic System Analysis, Introduction to Engineering Optimization, Advanced Differential Equations, Applied Statistics, Linear Algebra, Calculus, Numerical Methods

Bandarawela Central College, Bandarawela

Graduated : 2019

GCE Advanced Level (Mathematics, Physics, Chemistry, English)

4As / 5th in Sri Lanka / z-score : 3.067

(Country-wide university entrance examination taken by over 100,000 students annually.)

EXPERIENCE

University of Moratuwa

May 2024 – Present

Undergraduate Researcher

- Conducting research on vision language models for dense prediction tasks.

Singapore University of Technology and Design

Dec 2023 – May 2024

Research Assistant Intern

- Project 1 - Developed a computer vision algorithm to detect and localize robots in a multi-robot environment using a single fish eye lens camera. It can localize robots with an error of less than 0.5 m and 5 degrees.
- Project 2 - Developed an LLM/GenAI pipeline for video network analysis to reduce storage and manual analysis requirements. This work was accepted for TENCON 2024.

University of Moratuwa

Oct 2023 – Nov 2023

Visiting Instructor

- Conducted practical lab sessions for EN2553 : Robot Design and Competition.

SELECTED PROJECTS

Out-of-Domain Open Vocabulary Semantic Segmentation | VLMs, OVSS

June 2024 – Present

- Developed a segmentation-specific test time optimization framework based on vision language models (VLMs) for out-of-domain open vocabulary semantic segmentation (OVSS) tasks and evaluated on a diverse multi-domain benchmark to obtain +2.03 mIoU overall improvement over the state-of-the-art. This work is currently under review for CVPR 2025.

Generative AI-based Video Analysis | Gemini

Feb 2024 – June 2024

- Developed an LLM/GenAI pipeline for video network analysis to reduce storage and manual analysis requirements. This work was accepted for TENCON 2024.

Robot Localization using a Single 360-Degree Camera | YOLO, CNNs

Dec 2023 – May 2024

- Developed a computer vision algorithm to detect and localize robots with an error of less than 0.5 m and 5 degrees using a single fish eye lens camera.

Ophthalmic Biomarker Detection | TensorFlow, Pytorch, Kaggle [Git](#)

July 2023 – Oct 2023

- Research and implementation of a state-of-the-art contrastive learning model and a supervised model to accurately classify the presence of six biomarkers in an OCT scan.

Smartphone Image Super Resolution

Sept 2023 – Nov 2023

- Replicated an existing image super-resolution framework to reduce high noise levels of smartphone imaging in low light conditions.

Flower Trading Platform | *OOP, Multithreading* [Git](#)

July 2023 – Sept 2023

- Designed a flower trading platform to model a stock exchange using object-oriented programming concepts and multi-threading in C++.

Autonomous Task Solving Dual Robot System | *Arduino, Git*

March 2023 – May 2023

- Built a dual robot system capable of navigating a maze arena, and a dotted line section, avoiding obstacles, identifying surface colours, and communicating with each other.
- I was responsible for coding the robot functionalities, robot design and project management.

Simple Autonomous Robot Car and Simulation | *Arduino, Webots* [Git](#)

Sept 2022 – Dec 2022

- Developed a basic autonomous line-following robot and designed a simulation-based robot on webots with capabilities encompassing line following wall following, and puzzle-solving.
- I was responsible for the simulation task.

PUBLICATIONS

U. De Silva, D. Samaraweera, S. Wanigathunga, K. Kariyawasam, K. Ranasinghe, M. Naseer, R. Rodrigo, “Test-Time Optimization for Domain Adaptive Open Vocabulary Segmentation”. (Under Review for CVPR 2025)

U. De Silva, L. Fernando, K. Bandara, R. Nawaratne, “Video Summarisation with Incident and Context Information using Generative AI”, *IECON 2024 - 50th Annual Conference of the IEEE Industrial Electronics Society*, Chicago, USA, Nov. 2024.

U. De Silva, L. Fernando, B.P.L. Lau, Z. Koh, S. Joyce, B. Yuen, C. Yuen, “Large Language Models for Video Surveillance Applications”, *TENCON 2024 - IEEE Region 10 Conference*, Singapore, Dec. 2024.

TECHNICAL SKILLS

Languages: English (Professional Proficiency), Sinhala (Native Proficiency)

Programming Languages: Python, C++

Frameworks: PyTorch, TensorFlow (novice)

Software & Tools: VS Code, Matlab, Arduino, Webots, Latex, GIT, Altium, Linux

SCHOLARSHIPS, ACHIEVEMENTS AND AWARDS

Finalist – IEEE IES Generative AI international hackathon **Sep 2024**

Ranked 3rd in world – Roboroarz’24, Robot Design and Strategic Thinking Competition **Mar 2024**

Ranked 14th in world – IEEE Image and Video Processing Cup **Sep 2023**

Ranked 287th in world – IEEEEXTreme 15.0, 24 hour, online hackathon with **5500+** teams **Oct 2021**

Mahapola Merit Scholarship – Awarded for being island **5th** in GCE A/L examination **2019**

PoH Scholarship – Awarded by Zagro Singapore pte ltd for being island **5th** in GCE A/L examination **2019**

Fourth Place – Techno Odyssey Robotic Competition organized by SLTC Research University **2023**

Dean’s List – Semesters 1,2,4,5 and 6 **Aug 2021 - Present**

VOLUNTEER AND EXTRA-CURRICULAR ACTIVITIES

Head of Project Management – Spark Branch, Electronic Club, University of Moratuwa **Sep 2024 - Present**

Webmaster – IEEE Signal Processing Society, University of Moratuwa **Nov 2023 - Nov 2024**

Manager and Team Leader – AIESEC in Colombo South **Aug 2021 - Aug 2022**

Department Representative – For second and third semesters **May 2022 - Jan 2023**

Co-chair : Shuttlefest – Badminton tournament for department students **June 2022 - Oct 2022**

Executive Committee Member – IEEE ProComm Society, University of Moratuwa **Apr 2022 - Apr 2023**

Volunteer – Sasnaka Sansada Foundation **Jan 2020 - 2023**

President – Science Society of Bandarawela Central College **2018 - 2019**

Player – Hockey team of Nalanda College, Colombo 07 **2011**