

ULINDU PABASARA DE SILVA

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OBJECTIVE

A highly dedicated AI/ML researcher with a robust academic foundation in Mathematics and a proven track record in Computer Vision and NLP applications. A quick learner motivated by a genuine passion for research and innovation. Actively seeking opportunities to apply my skills and develop transformative technology.

EDUCATION

University of Moratuwa, Moratuwa

June 2021 – Present

B.Sc. Honours in Electronic and Telecommunications Engineering

CGPA: 3.86/4.00

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

- Developed a segmentation-specific test time optimization framework based on vision language models (VLM) for out-of-domain open vocabulary semantic segmentation (OVSS) tasks.
- Obtained a +2.03 mIoU overall improvement and is currently under review at CVPR 2025.

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 cut down on 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.

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 (**Accepted for IECON 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 (**Accepted for TENCON 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

SELECTED PROJECTS

Out-of-Domain Open Vocabulary Semantic Segmentation <i>VLMs, OVSS</i>	June 2024 – Present
<ul style="list-style-type: none">Developed an OVSS tool 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 Tool <i>Gemini</i>	Feb 2024 – June 2024
<ul style="list-style-type: none">Developed a pipeline to streamline video analysis using LLMs and GenAI.This work was accepted for TENCON 2024.	
Ophthalmic Biomarker Detection <i>TensorFlow, Pytorch, Kaggle</i> Git	July 2023 – Oct 2023
<ul style="list-style-type: none">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
<ul style="list-style-type: none">Replicated an existing image super-resolution framework to reduce high noise levels of smartphone imaging in low light conditions.	
Flower Trading Platform <i>OOP, Multithreading</i> Git	July 2023 – Sept 2023
<ul style="list-style-type: none">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 <i>Arduino, Git</i>	March 2023 – May 2023
<ul style="list-style-type: none">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 <i>Arduino, Webots</i> Git	Sept 2022 – Dec 2022
<ul style="list-style-type: none">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.	

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

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	Apr 2022 - Apr 2023
President – Science Society of Bandarawela Central College	2018 - 2019
Player – Hockey team of Nalanda College, Colombo 07	2011