

Devnith Wijesinghe

Final-year Engineering Undergraduate

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🐙 github.com/devnithw

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Summary

I am a final-year engineering undergraduate at the University of Moratuwa with research experience in vision-language models and deep generative models. I am interested in pursuing theoretically grounded PhD research in computer vision and machine learning.

Interest areas: Deep Generative Models, Diffusion Language Models, Vision-Language Models

Education

Faculty of Engineering, University of Moratuwa

Aug. 2022 - present

Bachelor of Science (Hons) in Engineering,

Department of Electronic and Telecommunication Engineering

- CGPA : 3.98/4.0
- Dean's List in semesters - 1, 2, 3, 4, 5, 6, and 7

Richmond College Galle

Jan. 2012 - Aug. 2020

G.C.E. Advanced Level (Physical Science stream)

Research Experience

Research Engineer

Jul. 2026 - Present

WSO2 (Advised by: Dr. Srinath Perera)

Colombo, LK

- Conducting research on generative AI for enterprise applications.

Visiting Research Student

Dec. 2024 - Jul. 2025

The University of Sydney (Advised by: Prof. Anusha Withana)

Sydney, NSW

- Conducted research on magnetic interaction design for Human Computer Interaction (HCI).
- Investigated machine learning surrogate models for simulating magnetic fields.

Publications

PathKGen: Pathology Knowledge Assisted MLLM for Explainable Histopathology

(Under review)

Projects

Magnetic Interaction Design Framework

The University of Sydney 2025

- Designed a gradient-based optimization framework to be used as a co-design tool for magnetic interaction design in Human Computer Interaction (HCI) applications.
- Modeled magnetic fields using machine learning surrogate models such as Physics-Informed Neural Networks and used them to develop computationally efficient optimization algorithms.
- Verified the simulations using finite element analysis software COMSOL Multiphysics.

OCT Image Denoising, Super-resolution and Classification 🔗

VIP Cup 2024

- Implemented the denoising of OCT B-scans using SVD and BM3D.
- The resulting OCT scans were then upscaled to a higher resolution using an EDSR-GAN model. A ResNet-18 backbone was used for transfer learning to classify the final images into 3 classes to identify diabetic symptoms.
- Completed as a submission to the Video and Image Processing Cup 2024.

HIV Inhibitor Classification Using Graph Neural Network 🔗

Self-initiated

- Developed a Graph Neural Network using PyTorch Geometric to classify the HIV inhibitory activity of molecules.
- Used MoleculeNet repository to obtain molecule data in the form of SMILES strings and extracted molecular features using the DeepChem library for graph-level classification.
- Addressed class imbalance using oversampling/undersampling techniques and weighted cross-entropy loss.

Fine-tuning Stable Diffusion XL with DreamBooth 🔗

SkillSurf

- Used DreamBooth with an automated Hugging Face tool called AutoTrain to fine-tune SDXL for users' own images.
- Made as a demonstration at the Introduction to Generative AI workshop hands-on session.

MFCC Speaker Recognition 🔗

Signal Processing Cup 2024

- Created a deep neural network to classify audio recordings of 71 speakers using Mel-Frequency Cepstral Coefficients as a feature extractor. The architecture consisted of a bidirectional LSTM network trained on triplet-cosine loss.
- Designed as a solution for Signal Processing Cup 2024 challenge problem.

Line-follower Robot Computer Vision System 🔗

Sri Lanka Robotics Challenge 2024

- Trained a lightweight deep learning-based computer vision system to identify cubes and cylinders to run on the Raspberry Pi 4 hardware platform.
- Used a MobileNet architecture via TensorFlow Lite for inference at the edge.
- This system was implemented to optimize a time-consuming sub-task at Sri Lanka Robotics Challenge 2024. The deployment of this lightweight inference system on the line-follower robot outperformed every other group within that particular sub-task.

Volunteering

IEEE EMBS Student Chapter, University of Moratuwa

Head of Public Relations
Brainstorm 2024 - Design Lead
Executive Committee - Content Creator
Member

Sep. 2024 - Sep. 2025
Dec. 2023 - Nov. 2024
Jul. 2023 - Jul. 2024
Jan. 2023 - Jun. 2023

Rotaract Club of University of Moratuwa

Co-director of Membership Development
Co-chair of Premio Foramalita and Euphoria Prom
Co-chair of project Manusath Handa
Inducted Member

Jun. 2023 - Jun. 2024
Apr. 2023 - May. 2023
Aug. 2022 - May. 2023
Sep. 2022 - May. 2023

Mathematics Society, University of Moratuwa

Design team

2023

Electronic Club, University of Moratuwa

Graphic designer and editorial pillar member

2023

Honors and Awards

Finalist, Sri Lanka Robotics Challenge 2024	<i>Mar. 2024</i>
Spirit of Service Award, Rotaract Mora	<i>May. 2023</i>
Dean's list placement (Semesters 1, 2, 3, 4, 5, 6, and 7), University of Moratuwa	<i>Jul. 2025</i>
Sri Lanka Chemistry Olympiad Honorable Mention	<i>Jan. 2020</i>
Sri Lanka All Island Mathematics Quiz Bronze medal	<i>Jan. 2020</i>
Principal's medal for best Ordinary Level (OL) results, Richmond College	<i>2018</i>

Invited Talks

Finetuning Stable Diffusion XL for your own images	<i>SkillSurf (2024)</i>
Delivered as a part of the free one-day workshop "Introduction to Generative AI" by SkillSurf	
Video Slides	
Introduction to AI in Healthcare	<i>Brainstorm (2026)</i>
Delivered as a part of the Brainstorm 2026 workshop series organized by IEEE EMBS Student Branch Chapter at University of Moratuwa.	
Video	

Technical Skills

Languages: Python, MATLAB, C, C++, Julia, Lua
Markup: HTML, CSS, L^AT_EX, Markdown
Libraries: PyTorch, PyTorch Geometric, JAX, NumPy
Tools/Other: Git, GitHub, Obsidian

References

Associate Prof. Anusha Withana

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New South Wales,
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Dr. Ranga Rodrigo

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