

L. THARINDU NIRMAL WICKREMASINGHE

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A recent graduate inspired by mathematical and statistical analysis of machine learning models. Recently, I have been intrigued by structured sparsity in compressive sensing, and computational imaging.

Research Interests:

Signal Processing Compressive Sensing
Statistical Learning Theory Machine Learning

EDUCATION

University of Moratuwa, Sri Lanka B.Sc.Engineering(Hons.) Electronics and Telecommunications Faculty of Engineering	Cumulative GPA: 4.16/4.20 (First Class Hons.) Dean's List in all Semesters 1,2,3,4,5,6,7,8 Class rank 1/118 , Gold medal Faculty rank 1/980 , Gold medal	<i>2018-2023</i>
Nalanda College, Colombo, Sri Lanka -Physical Science G.C.E. Advanced Level-university entrance examination 2017		<i>Graduated: 2018</i> 4As /Z-score: 2.4985 (top 1%)

EXPERIENCE

Visiting Instructor - University of Moratuwa, Sri Lanka	<i>2022-present</i>
Remote Undergraduate Researcher - Centre for Advanced Imaging, Harvard University	<i>2022-2023</i>
Research Intern -School of Computing, University of Sydney, Australia	<i>2021-2022</i>

RESEARCH, PUBLICATIONS, SELECTED PROJECTS

Masked Optimisation with Selective Attention for Image Reconstruction Nov 2022 - present
Undergraduate research, colaboration with Wadduwage lab, Harvard university *Preprint* 🌐

- P. Somarathne, **T. Wickremasinghe**, A.Niwarthana, A. Thieshanthan, C. Edussooriya, D. Wadduwage; *MO-SAIC: Masked Optimization with Selective Attention for Image Reconstruction* (pre-print)
- **T. Wickremasinghe**, A.Niwarthana, P. Somarathne, A. Thieshanthan, B. Weissbourd, C. Edussooriya, D. Wadduwage; *Lost in Translation: The Critical Role of Attention in Adaptive Image Reconstruction*, OSA Optica Imaging Congress, Cambridge, MA, 2023. (Extended abstract, Conference presentation)

Feature Generation through Graph Neural Networks May - Dec 2021
Self Initiated Undergraduate Research *ICPR 2022 publication* 🌐

- A. Thieshanthan, A. Niwarthana, P. Somarathne, **T. Wickremasinghe** and R. Rodrigo, "HPGNN: Using Hierarchical Graph Neural Networks for Outdoor Point Cloud Processing," in 2022 26th International Conference on Pattern Recognition (ICPR), Montreal, QC, Canada, 2022 pp. 2700-2706.

Real-time Configuration of Intelligent Reflecting Surfaces Feb - June 2021
Research competition- ICASSP 2021 *Video* 📺 *Report* 📄 *Announcement* 🌐

- IEEE Signals Processing Cup 2021. Our solution was **awarded 1st** place, invited to present at **IEEE ICASSP 2021-Toronto, Canada**. Supervised by Dr. P. Dharmawansa

Real-time object detection Fall 2020 - 2021
Undergraduate research

- O. Jayasinghe, S. Hemachandra, D.Anhettigama, S. Kariyawasam, **T. Wickremasinghe**, C. Ekanayaka, R. Rodrigo, P.Jayasekara, "Towards Real-time Traffic Sign and Traffic Light Detection on Embedded Systems," 2022 IEEE Intelligent Vehicles Symposium (IV), Aachen, Germany, 2022, pp. 723-728.

Smart Breadboard for remote lab experiments

Self supervised Research and Innovation

October 2020 - Feb 2021







Video and Report- 

- Remote Access Breadboard to assist electronics laboratory work during lockdowns in the Pandemic. **1st place** at IEEE **PES** national design competition, Selected from IEE **CAS** student design competition 2020-2021, to represent Sri Lanka in the IEEE region 10 (Australia-Asia-Pacific).

SELECTED PROGRAMS, UNDERGRADUATE AWARDS

Gold medal	The most outstanding graduand in the faculty of Engineering, University of Moratuwa, Sri Lanka. For overall excellence in academics, extra curriculars, leadership, and civic service.	2023
Pre-doctoral invitee ,	Cornell-Maryland Max Planck Research School (CMMRS), Germany.	August 2023
SGI 2023	Selected to audit the workshops of the Summer Geometry Initiative at MIT- MA,USA.	August 2023
Fathima Fellow 2023/24 ,	mentored by Mohammed El Banani on analysis in ML models.	Fall 2023
Engineering Vacation Research Scholarhsip ,	under Anusha Withana at University of Sydney	2021/2022
ScholarX Fellow 2021/22 ,	mentored by Vinoj Jayasundara, on ML concepts related to VAEs.	2021-2022
Mahapola Merit scholarship	for Engineering undergraduates from the goverment of Sri Lanka for the top performers of university entrance examination	2018

COMPETITIONS AND HACKATHONS

Runners up	Datathon 2023 - Inter University Data science competition <i>An anomally detection of suspicious activities on a website</i> 	SLIIT
Champions	Datathon 2022 - Inter University Data science competition <i>A recommending system for a telecommunications company using Next Best Action.</i> 	SLIIT
Champions	Data storm 2021- All island open Data science and analytics hackathon <i>Predict customer status and recommend the most suitable product.</i> 	RCUOM
Runners up	Datathon 2020- Inter-University Data science competition <i>Forecast Coronavirus case counts and sector impact</i> 	SLIIT
Champions	Belt and Road Electricity simulation competition 2020 <i>Economical and energy efficient power distribution</i> 	Shanghai University of Power
Champions	Decrypt 2019- Product Innovation Ideathon <i>Heart disease and emergency alerting app for drivers</i> 	University of Moratuwa
Finalists	Mora Xtreme 2019,2020 - Algorithmic coding competitions	IEEE SB UOM
Finalists	Futurecast ideathon 2021 - for IOT products	Arimac Lanka

TEACHING AND PEER REVIEW EXPERIENCE

Visiting Instructor

EN4553 Machine Vision, UoM, Sri Lanka	Fall 2023
EN3551 Digital Signal Processing, UoM, Sri Lanka	Fall 2023
EN3160 Fundamentals of Image Processing and Machine Vision, UoM, Sri Lanka	Fall 2023
EN2412 Electronic Control Systems, UoM, Sri Lanka	Fall 2022
EN2091 Laboratory practise and projects, UoM, Sri Lanka	Fall 2022

Peer reviewer

ACM Interactive Surfaces and Systems (ACM ISS)	July 2022
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Peer review assistance

CVPR 2023 in the Machine Learning track for Dr. R.Rodrigo	January 2023
ICPR 2022 in the Graph Networks category for Dr. R.Rodrigo	March 2022

TECHNICAL SKILLS

Languages	Python, MATLAB, C++, L ^A T _E X
Frameworks	Pytorch, Tensorflow
Software	Solidworks, Altium, Multisim, LTSpice, Webots

VOLUNTEERING, LEADERSHIP AND EXTRA-CURRICULARS

Lecturing, Instructing and Community service

- Co-founder-Danuma Yathra Foundation, volunteering in rural schools of Sri Lanka, teaching highschool Mathematics and Science in schools with severe shortage of STEM teachers 2018-2020.
- Volunteer lecturer and instructor at astronomical society events 2018-2022.
- Assistant Manager, Knowldge Hub of ENTC 2021-2022.
- Member of the Rotaract Club - University of Moratuwa 2018-2023.
- Physics Laboratory Instructor for Advance-Level students at Lyceum International School- Colombo 2017-2018.

Featured Talks, Presentations, and Articles

- Moderator on the panel “*Future of AI in Engineering*” at EXMO-2023 Flagship Public Engineering Exhibition of the University of Moratuwa, August 2023.
- Poster Presentation at the International Conference on Communicating Astronomy with the Public (CAP) 2022.
- Article by Emil Bjornson, Lucio Marcerano; *Configuring an Intelligent Reflecting Surface for Wireless Communications: Highlights from the 2021 IEEE Signal Processing Cup student competition*, IEEE Signal Processing Magazine, January 2022, pp 126-131.

SELECTED AWARDS PRIOR TO UNIVERSITY

The Most Outstanding Student award in both Junior and Senior categories for the graduating class of Nalanda College, for overall excellence in academics and extra curriculars.	2011,2017
The Best performance in Academics award for Physical Sciences,	
Overall Best in Academics in Nalanda College for the graduating class of 2017	2017
2 Bronze medals - International Earth Science Olympiad (Individual and Field project), Brazil	2015
5 Bronze medals - International Junior Mathematics Olympiads, Indonesia	2009-2011
Gold medalist in the National Physics Olympiad 2017, Bronze medalist in 2016	
2 Gold, 1 Silver, and 1 Bronze medal in the National Astronomy and Astro-Physics Olympiads in Junior (2012/13) and Senior categories (2014/15)	2012/13/14/15
Class excellence with national rank 1 in the Royal Australian Chemical Institute Senior Quiz	2016