

# L. THARINDU NIRMAL WICKREMASINGHE

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A recent graduate inspired by stochastic processes and theory of machine learning. 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

2018-2023

**Nalanda College, Colombo, Sri Lanka**-Physical Science

G.C.E. Advanced Level-university entrance examination 2017

Graduated: 2018

4As /Z-score: 2.4985 (top 1%)

## EXPERIENCE

**Visiting Instructor**- University of Moratuwa, Sri Lanka

2022-present

**Technical Consultant**- IQ labs, Sri Lanka

Summer 2023

**Remote Undergraduate Researcher**- Centre for Advanced Imaging, Harvard University

2022-2023

**Research Intern**-School of Computing, University of Sydney, Australia

2021-2022

## 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)

**Hierarchical 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

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**Gold medal** for 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

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

## TEACHING AND PEER REVIEW EXPERIENCE

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### Visiting Instructor

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

### Peer reviewer

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|--|------------------|
| ACM Interactive Surfaces and Systems (ACM ISS) | <i>July 2022</i> |
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### Peer review assistance

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| CVPR 2023 in the Machine Learning track for Dr. R.Rodrigo  | <i>January 2023</i> |
| ICPR 2022 in the Graph Networks category for Dr. R.Rodrigo | <i>March 2022</i>   |

## TECHNICAL SKILLS

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|-------------------|--|
| <b>Languages</b>  | Python, MATLAB, C++, L <sup>A</sup> T <sub>E</sub> X |
| <b>Frameworks</b> | Pytorch, Tensorflow                                  |
| <b>Software</b>   | Solidworks, Altium, Multisim, LTSpice, Webots        |

### MOOCs

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|--|--------------------|
| Mathematics for Machine Learning- Imperial College London- ( <i>Coursera</i> ) | <i>August 2020</i> |
| Neural Networks and Deep Learning- Deeplearning.AI ( <i>Coursera</i> )         | <i>July 2020</i>   |
| Computational Thinking and Datascience- MIT 6.00.2 ( <i>EdX</i> )              | <i>June 2020</i>   |
| Machine Learning- Stanford University ( <i>Coursera</i> )                      | <i>May 2020</i>    |

## VOLUNTEERING, LEADERSHIP AND EXTRA-CURRICULARS

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### 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, Knowledge 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, July 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, IEEE Signal Processing Magazine, Volume 39, Issue 1, January 2022, pp 126-131.

## SELECTED AWARDS PRIOR TO UNIVERSITY

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

*References available upon request*