Laknath Ashwin De Silva

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I am a second-year PhD student in the Department of Biomedical Engineering at Johns Hopkins University. I am fortunate to be advised by Dr. Joshua Vogelstein, Dr. Pratik Chaudhari (UPenn), and Dr. Carey E. Priebe (JHU). My work primarily focuses on building deep learning and statistical machine learning methods for out-of-distribution (OOD) generalization and continually learning systems. Additionally, I have a keen interest in the applications of computer vision, geometric deep learning, signal processing, and biomedical data science.

Education

2021–present	**Doctor of Philosophy, Biomedical Engineering**, *Johns Hopkins University*, MD, USA.
	Highlighted Courses: Statistical Pattern Recognition, Probability Theory, Statistical Theory, Neuro Data Design
CGPA :	4.00/4.00
2016–2020 :	**Bachelor of Science, Biomedical Engineering**, *University of Moratuwa*, Sri Lanka.
	Class Rank : 1 out of 117, Faculty Rank : 1 out of 948, Included in Dean's Honors List in all 8 consecutive semesters.
	Highlighted Courses: Real Analysis, Calculus, Differential Equations, Linear Algebra, Signals and Systems, Machine Vision, Digital Signal Processing, Data Structures & Algorithms
CGPA :	4.09/4.20 (First Class Honors)

Work Experience

2019-2021	**Junior Lecturer**, *Dept. of Electronic and Telecommunication Engineering*, University of Moratuwa, Sri Lanka.
2018	**Research Intern**, *Center for Advanced Imaging*, University of Queensland, Australia.
2017,2018	**Research Intern**, *Florey Institute of Neuroscience & Mental Health*, University of Melbourne, Australia.

Publications

In Conference Proceedings

Workshop Papers

Preprints

Theses

Academic Achievements & Recognitions

2021	**2nd Runners-up of the IEEE Video and Image Processing Cup** awarded at the International Conference on Image Processing (ICIP) 2021, Anchorage, Alaska, USA
2020	**Prof. Pathuwathawithana Memorial Prize** for attaining the *highest* GPA at the Faculty of Engineering, University of Moratuwa, Sri Lanka
2020	**Gold Medal sponsored by Technomedics International Pvt Ltd** for the *highest* overall academic performance in the Biomedical Engineering Stream (University of Moratuwa)
2020	**National Finalists at the Migara Ranatunga Awards** awarded by Institution of Engineers, Sri Lanka (IESL) for the *best* performance in the research internship
2019	**World Finalists at the IEEE ComSoc Student Competition** ranked among *the top 15 in the world*, Received an Honorable Mention
2019	**Merit Award at SLAAS Awards** awarded by Sri Lanka Association for the Advancement of Science for the *best undergraduate project of Sri Lanka*
2019	**National Finalists at the Sri Lankan IoT Challenge** ranked among *the top 10 in the country*, Received an Honorable Mention

2019 **Runners-Up at the the National Inter-University Statistics Quiz Competition** Organized by University of Sri Jayawardenapura, Sri Lanka

2016 **Dialog Merit Scholarship for Engineering Undergraduates** awarded by Dialog Axiata PLC for the students who excelled at the university entrance examinations

2016 **Mahapola Merit Scholarship for Engineering Undergraduates** awarded by the Government of Sri Lanka for the students who excelled at the university entrance examinations

Selected Teaching Experience

Teaching Assistant

2021 Fall: **EN 1060: Signals and Systems**, UoM, Sri Lanka.

2020 Fall: **EN 2030: Laboratory Practice II**, UoM, Sri Lanka.

2020 Spring: **EN 3030: Circuits and Systems Design**, UoM, Sri Lanka.

2020 Spring: **BM 4111: Medical Electronics and Instrumentation**, UoM, Sri Lanka.

2020 Fall: **BM 2101: Analysis of Physiological Systems**, UoM, Sri Lanka.

2020 Fall: **BM 2011: Human Anatomy and Physiology**, UoM, Sri Lanka.

2019 Fall: **EN 1093: Laboratory Practice I**, UoM, Sri Lanka.

2018 Spring: **DE 2410: Astronomy and Cosmology**, UoM, Sri Lanka.

Visiting Lecturer

2020 Spring: **Workshop on MATLAB for signal/image processing, communication systems, and electronics**, Institute of Engineering Technology, Sri Lanka.

Technical skills

Programming Languages: Python, MATLAB, C/C++, Verilog HDL, LaTeX

Frameworks: PyTorch, PyG (PyTorch Geometric), Tensoflow, Keras, scikit-learn, ITK/VTK

Software: Quartus, Multisim, AutoCAD, Altium, Solidworks

Hardware: STM32 Family, Atmel AVR, Altera DE2, Raspberry Pi, Arduino

Selected Talks

Oct. 2022 *The Value of Out-of-distribution Data*, ECCV 2022 workshop on Out-of-distribution Generalization in Computer Vision, Tel Aviv, Israel

Sep. 2022 Critique on *Invertible Neural Networks for Graph Predictions*, Theorinet Retreat, Simons Foundation, NY, USA

Jun. 2021 *A Joint Convolutional and Spatial Quad-Directional LSTM Network for Phase Unwrapping*, 46th International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Toronto, Canada

Jun. 2020 *Real-time hand gesture recognition using temporal muscle activation maps of multi-channel sEMG signals*, 45th International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Barcelona, Spain

Selected Poster Presentations

Apr. 2022 *Kernel Density Networks*, From Neuroscience to Artificially Intelligent Systems (NAISys), Cold Spring Harbor Laboratory, NY, USA

Jun. 2021 *A Joint Convolutional and Spatial Quad-Directional LSTM Network for Phase Unwrapping*, 46th International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Toronto, Canada

Professional Activities

Organizing

2021 *IEEE EMBS International Student Conference*, Moratuwa, Sri Lanka

2018 *Workshop on Brain Computer Interfaces*, MerCon 2018, Moratuwa, Sri Lanka

2017 *TechMedImpact Forum*, Sri Lanka

Reviewing (Conferences)

2021 *IEEE EMBS International Student Conference*, Moratuwa, Sri Lanka