Ashwin De Silva

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Summary

Ph.D. candidate in Biomedical Engineering with expertise in statistical machine learning and deep learning, focused on developing robust models for out-of-distribution generalization and continual learning. Passionate about bridging artificial and natural intelligence. My work spans applications in large language models, biomedical data, and computer vision.

Education

Johns Hopkins University, Ph.D. in Biomedical Engineering — Aug 2021 – May 2026

- GPA: 3.97/4.00
- **Coursework:** Machine Learning, Optimal Transport, Probability Theory, Statistical Theory, High-Dimensional Approximation, Probabilistic Models of Visual Cortex, Neuroscience and Cognition, Computational Molecular Medicine, Compressed Sensing Sparse Recovery, Entrepreneurial Finance

Johns Hopkins University, M.S.E in Applied Mathematics and Statistics — Aug 2021 – May 2024

- GPA: 3.98/4.00
- **Focus Area:** Statistics and Statistical Learning

University of Moratuwa, B.Sc. in Biomedical Engineering — Jan 2016 – Jan 2020

- GPA: 4.09/4.20
- Class Rank: 1 / 948, Dean's Honors List in every semester
- **Coursework:** Machine Vision, Signals and Systems, Digital Signal Processing, Data Structures and Algorithms, Real Analysis, Calculus, Differential Equations, Linear Algebra

Selected Experience

Applied Scientist Intern, Amazon AWS AI – Santa Clara, CA — Jun 2024 – Sept 2024

- Designed, trained, and validated large language models based on State-Space Models (SSMs). These models were used for code generation and lexically constrained text generation.

Junior Lecturer, University of Moratuwa – Sri Lanka — Jan 2020 – Aug 2021

- Conducted research on deep learning methods for biomedical signal and image analysis, including retinal vascular segmentation, surface EMG-based hand gesture recognition, human pose estimation, and phase unwrapping. This work led to publications in IEEE ICASSP and IEEE SMC.
- Taught signals and systems, circuits and systems design, and analysis of physiological systems.

Research Assistant, Florey Institute of Neuroscience and Mental Health – Australia — Jun 2018 – Dec 2018

- Designed and implemented software tools for electrophysiological signal analysis, enabling large-scale data processing and biomarker extraction. This work was used to support genetic epilepsy research.

Selected Publications

- **Ashwin De Silva**, Rahul Ramesh, Rubing Yang, Siyu Yu, Joshua T. Vogelstein, and Pratik Chaudhari. Prospective learning: Learning for a dynamic future. *Neural Information Processing Systems (NeurIPS)*, 2024.
- **Ashwin De Silva**, Rahul Ramesh, Carey E. Priebe, Pratik Chaudhari, and Joshua T. Vogelstein. The value of out-of-distribution data. *International Conference on Machine Learning (ICML)*, 2023.

Selected Achievements & Recognition

- Member, Alpha Eta Mu Beta (AEMB) - National Biomedical Engineering Honor Society (2025)
- Mathematical Institute for Data Science (MINDS) Fellowship, Johns Hopkins University (2024)
- Johns Hopkins School of Medicine Student Spotlight (2023)
- Best Paper Award, ECCV 2022 Workshop on Out-of-distribution Generalization in Computer Vision (2022)