PASAN DISSANAYAKE

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in linkedin.com/in/pasandissanayake   github.com/pasandissanayake

RESEARCH INTERESTS

My research interests lie in the area of responsible and trustworthy machine learning. I am particularly interested in using tools from information theory, statistics and optimization in explaining ML models and data, achieving privacy, and formulating the notions of fairness.

EDUCATION

University of Maryland, College Park, MD   Started Aug. 2022
PhD in Electrical and Computer Engineering (CGPA: 4.0/4.0)
Adviser: Prof. Sanghamitra Dutta
Research focus: Responsible and trustworthy machine learning

University of Moratuwa, Sri Lanka   Graduated Aug. 2021
BSc (Hons.) in Electronic and Telecommunication Engineering (GPA: 4.04/4.2)
Research adviser: Dr. Prathapasinghe Dharmawansa

PUBLICATIONS

- **P. Dissanayake** and S. Dutta, "Model Reconstruction Using Counterfactual Explanations: A Perspective From Polytope Theory", (recently got accepted at NeurIPS 2024)

- F. Hamman, **P. Dissanayake**, S. Mishra, F. Lecue, S. Dutta, "Quantifying Prediction Consistency Under Model Multiplicity in Tabular LLMs" (under review)

- B. Halder, F. Hamman, **P. Dissanayake**, Q. Zhang, I. Sucholutsky, S. Dutta, "Quantifying Spuriousness of Biased Datasets Using Partial Information Decomposition," DMLR workshop at ICML 2024

- **P. Dissanayake**, P. Dharmawansa and Y. Chen, "Distribution of the Scaled Condition Number of Single-Spiked Complex Wishart Matrices," in IEEE Transactions on Information Theory, vol. 68, no. 10, pp. 6716-6737, Oct. 2022

- P. Dharmawansa, **P. Dissanayake** and Y. Chen, "The Eigenvectors of Single-Spiked Complex Wishart Matrices: Finite and Asymptotic Analyses," in IEEE Transactions on Information Theory, vol. 68, no. 12, pp. 8092-8120, Dec. 2022

AWARDS AND HONORS

- **Outstanding Teaching Assistant (2024) - ECE, University of Maryland**

- **Dean's Fellowship (2022) - University of Maryland**

- **Dean's List (in all 8 semesters) - University of Moratuwa**
  For maintaining a semester GPA of 3.8 or higher during the considered semester

- **Google Hash Code (2019) Country rank: 3**
  Team programming competition based on real Google engineering problems

- **MoraXtreme (2017) Second runners-up**
  Team programming competition organized by IEEE Student Branch of University of Moratuwa

RESEARCH EXPERIENCE

Research Assistant   Jan 2024 to Present
Department of Electrical and Computer Engineering,
University of Maryland, College Park, MD
Research focus: Explainability, privacy and fairness in machine learning

Research Assistant Aug. 2021 to Aug. 2022
Department of Electronic and Telecommunication Engineering,
University of Moratuwa, Sri Lanka
Research focus: Properties of single-spiked complex Wishart matrices

EMPLOYMENT

Teaching Assistant Aug. 2022 to Dec. 2023
Department of Electrical and Computer Engineering,
University of Maryland, College Park, MD

Lecturer (on Contract) Dec. 2021 to Aug. 2022
Department of Electronic and Telecommunication Engineering,
University of Moratuwa, Sri Lanka

Systems Engineer (Intern) Jun. 2019 to Dec. 2019
Infrastructure Solutions Team
MillenniumIT ESP (Pvt) Ltd., Colombo 07, Sri Lanka
Designed and implemented (in Proof of Concept level) a charging gateway for a leading telecom
service provider, based on microservices architecture

TEACHING EXPERIENCE

University of Maryland, College Park, MD
  - ENEE420 - Communication Systems (Fall 2022)
  - ENEE324 - Engineering Probability (Spring 2023, Fall 2023)
  - ENEE436 - Foundations of Machine Learning (Fall 2023)

University of Moratuwa, Sri Lanka
  - EN4720 - Security in Cyber-Physical Systems
  - EN2550 - Fundamentals of Image Processing and Machine Vision
  - EN3053 - Digital Communications - I

PRESENTATIONS

Model extraction using counterfactual explanations (Poster)
  Northrop Grumman University Research Symposium, McLean, VA (Oct. 2023)
  North American School of Information Theory, Philadelphia, PA (June 2023)

COMPUTER LANGUAGES AND TOOLS

Programming: Python, C++, Java **Technical Computing:** MATLAB, Mathematica
Data/ML Frameworks: Tensorflow, PyTorch, Keras, Scikit-Learn, Pandas

CERTIFICATIONS

  - Machine Learning - Stanford University on Coursera

  - Data Structures - University of California, San Diego on Coursera

  - Algorithmic Toolbox - Offered by the University of California, San Diego on Coursera

  - Certificate in Software Development in Java - National Institute of Business Management, SL

  - Networking Essentials (NE-CS3032-IN-16-EN) - Offered by Cisco Networking Academy

RELEVANT COURSEWORK

  - CMSC764 - Advanced Numerical Optimization (UMD, Spring 2024)

  - CMSC742 - Algorithms in Machine Learning: Guarantees and Analyses (UMD, Fall 2023)

  - ENEE662 - Convex Optimization (UMD, Fall 2023)

- ENEE621 - Estimation and Detection Theory (UMD, Spring 2023)

- ENEE627 - Information Theory (UMD, Spring 2023)

- ENEE620 - Random Processes in Communication and Control (UMD, Fall 2022)

- EN4573 - Pattern Recognition and Machine Intelligence (UoM, Semester 8)

SERVICES AND OUTREACH

- Reviewer - IEEE International Symposium on Information Theory (ISIT) 2024

- Reviewer - ACM Conference on Fairness, Accountability, and Transparency (FAccT) 2024

- Reviewer - IEEE Wireless Communications Letters (*view on Publons*)

- Project Lead - UMD Trustworthy AI in Law and Society (TRAILS) AI Summer Camp 2024

- Member of the panel of judges - UMD Louis Stokes Alliance for Minority Participation (LSAMP) Fall Research Symposium 2023

- Mentor - Montgomery Blair High School Magnet Student Program 2023

- Secretary - Drama Society, University of Moratuwa for the year 2020/2021

- Co-chairperson - Organizing committee of "Abhina 2019", the annual talent show of the Dept. of Electronic and Telecommunication Engineering

- Volunteer - Soyuru Sathkaraya 2018: underprivileged school development project organized by Engineering Faculty Students' Union, University of Moratuwa

- Volunteer - E-Care 2018: Underprivileged school development project organized by Electronics Club, Dept. of Electronic and Telecommunication, University of Moratuwa

- Volunteer - Grama Prabodhaya 2017: Underprivileged school development project and junior high school seminar series organized by Rotaract Club, University of Moratuwa