

# PASAN DISSANAYAKE

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🐙 [github.com/pasandissanayake](https://github.com/pasandissanayake)

## RESEARCH INTERESTS

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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

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### 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

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- **P. Dissanayake** and Sanghamitra Dutta, “The Role of Counterfactual Explanations in Model Extraction Attacks” (under review)
- **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

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- **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

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### Summer Research Assistant

May 2023 to Aug. 2023

Department of Electrical and Computer Engineering,

University of Maryland, College Park, MD

Research focus: Risks of providing counterfactual explanations in terms of model extraction attacks (collaboration with Northrop Grumman)

### 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

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- Teaching Assistant** Aug. 2022 to Present  
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

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### 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

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### 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

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

## CERTIFICATIONS

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- 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 COURSES

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- 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, A+)
- ENEE627 - Information Theory (UMD, Spring 2023, A)
- ENEE630 - Advanced Digital Signal Processing (UMD, Fall 2022, A+)
- ENEE620 - Random Processes in Communication and Control (UMD, Fall 2022, A)
- EN4573 - Pattern Recognition and Machine Intelligence (UoM, Semester 8, A+)

## SERVICES AND OUTREACH

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