Sanjaya HERATH

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PROFILE

I am a third-year Ph.D. student in the Electrical and Computer Engineering department at the University of Maryland, College Park. My research interests lie primarily in the fields of **Machine Learning** and **Signal Processing**. I am co-advised by Professor Christopher Metzler at UMD and Dr. Kevin Wagner at the Naval Research Laboratory.

EDUCATION

- **University of Maryland, College Park**

    – Ph.D. in Electrical and Computer Engineering.
    – Current GPA: **3.79**/4.0.
    – Expected to graduate in **May 2026**.

- **University of Peradeniya, Sri Lanka**

    – B.Sc. (Eng.) First Class Honors in Electrical and Electronic Engineering.
    – Final GPA: **4.0** / 4.0, **Top** of the class (/417).

PUBLICATIONS

Conference Papers:

- D.Y.L. Ranasinghe, S. Herath, H.M.H.K. Weerasooriya, E.M.M.B Ekanayake, G.M.R.I Godaliyadda, H.M.V.R. Herath, M.P.B. Ekanayake (2020). *Convolutional Autoencoder for Blind Hyperspectral Image Unmixing*. 15th Conference on Industrial and Information Systems (Presenter). [Paper]

- J. M. V. D. B Jayasundara, R. M. L. S Ramanayake, H. M. N B Senarath, S. Herath, G.M.R.I Godaliyadda, H.M.V.R. Herath, M.P.B. Ekanayake (2020). *Multispectral imaging for automated fish quality grading*. 15th Conference on Industrial and Information Systems. [Paper]

- H.M.H.K. Weerasooriya, H.M.S Lakmal, D.Y.L. Ranasinghe, W.G.C. Bandara, H.M.V.R. Herath, G.M.R.I Godaliyadda, M.P.B. Ekanayake, T. Madhujith (2020). *Transmittance Multispectral Imaging for Edible Oil Quality Assessment*. Imaging and Applied Optics Congress, Optical Society of America (Presenter). [Paper]

- D.Y.L. Ranasinghe, H.M.S Lakmal, H.M.H.K. Weerasooriya, E.M.M.B Ekanayake, G.M.R.I Godaliyadda, H.M.V.R. Herath, M.P.B. Ekanayake (2019). *Hyperspectral Imaging Based Method to Identify Potential Limestone Deposits*. 14th Conference on Industrial and Information Systems. [Paper]

Journal Papers:

- S Herath, H.K. Weerasooriya, D.Y.L. Ranasinghe, W.G.C. Bandara, H.M.V.R. Herath, G.M.R.I Godaliyadda, M.P.B. Ekanayake, Terrence Madhujith *Quantitative assessment of adulteration of coconut oil using transmittance multispectral imaging* Springer J. Food. Science and Technology [Paper]

- D.Y.L. Ranasinghe, H.M.H.K. Weerasooriya, S. Herath, M.P.B. Ekanayake, H.M.V.R. Herath, G.M.R.I Godaliyadda, T. Madujith (2022). *Transmittance Multispectral Imaging for Reheated Coconut Oil Differentiation*. IEEE Access. [Paper]

- E.M.M.B. Ekanayake, D.Y.L. Ranasinghe, H.M.H.K. Weerasooriya, S. Herath, B. Rathnayake, G.M.R.I. Godaliyadda, H.M.V.R. Herath, M.P.B. Ekanayake (2021). *Constrained Nonnegative Matrix Factorization for Blind Hyperspectral Unmixing incorporating Endmember Independence*. IEEE J. Selected Topics in Applied Earth Observations and Remote Sensing. [Paper]

PATENTS

- **Title of the Invention:** "A Multi Spectral Imaging System to Measure Transmittance Spectrum", **Patent No (Sri Lanka):** 20936. **Owners:** H.M.H.K. Weerasooriya, H.M.S Lakmal, D.Y.L. Ranasinghe, W.G.C. Bandara, H.M.V.R. Herath, G.M.R.I Godaliyadda, M.P.B. Ekanayake.

PROJECTS

- **SNNs coupled with neuromorphic hardware for radar classification** (2023)
  Proposed a method that combines neuromorphic analog-to-digital converters (ADCs) with Spiking Neural Networks (SNNs) for a Radar High-Resolution Range profile recognition task

- **Stereo from Multiplexed Event Camera** (2022)
  Explored the possibility of using a multiplexed event camera for depth estimations. Experimented with tracking a point source in the real world after conducting successful simulations.

- **Deep learning for hyperspectral unmixing** (2020 - 2021)
  Deep learning has not been utilized extensively for the hyperspectral unmixing problem. Therefore, we experimented with deep learning for the hyperspectral unmixing problem. Developed a Deep autoencoder architecture that generates competitive results.

- **Image Processing for fish quality Assessment** (2020 - 2021)
  An automated system was not present to detect the fish quality in the Sri Lankan fisheries industry. We teamed up with NARA (National Aquatic Research lab) to develop a deep learning based method for real-time fish quality assessment. This resulted in an android app for real-time fish quality assessment.

- **Hyperspectral Imaging for Remote sensing and agricultural applications** (2019 - 2020)
  Field surveys used for manual lithological mappings are costly and time-consuming. Therefore, applied algorithms on hyperspectral imaging for potential mineral deposit detection. Successfully developed an algorithm to detect limestone in Jaffna, Sri Lanka.

- **Multispectral Imaging for food quality assessment** (2019 - 2020)
  Coconut oil is often adulterated with other oils and existing methods to detect adulteration are laborious and time-consuming. Hence, developed an MSI system for coconut oil quality assessment. Was able to detect coconut oil adulteration with high accuracy.

WORK EXPERIENCE

- **Naval Research Laboratory, Washington D.C.** (May-2023 - till-Date)
  - **Trainee Electrical Engineer**

- **University of Maryland, College Park** (Aug-2021 - May-2023)
  - **Graduate Teaching Assistant** for ENEE222-Elements of Discrete Signal Analysis and ENEE436-Introduction to Machine Learning.

- **University of Peradeniya, Sri Lanka** (Aug-2020 - Jul-2021)
  - **Teaching Assistant** for EM201-Mathematics III.

- **Paraqum Technologies, Sri Lanka** (Feb-2019 - May-2019)
  - **Intern** Signal Processing Intern at the R&D department.

AWARDS

- **Jane Ephremides Distinguished Endowed Graduate Fellowship** (2021)
  Awarded to outstanding Ph.D. students in the Department of Electrical and Computer Engineering at the University of Maryland in the field of information science and systems.

- **C.A. Hewavitharana Memorial Prize for the best performance in Engineering** (2020)
  Awarded to the best student among all fields of engineering in the faculty.

- **Ceylon Electricity Board Prize for best performance in Electrical & Electronic Engineering** (2020)
  Awarded to the best student in the field of Electrical and Electronic Engineering.

- **R.H. Paul Prize for Electrical Power & Machines** (2020)
  Awarded to the best performing student in the electric power and energy-related subject courses.

- **W.M.G. Fernando Prize for Electronic Communications** (2020)
  Awarded to the best performing student in the Electronic Communications related subject courses.

- **Prof. E.F. Bartholameusz Endowment Award for the best student project in Engineering Mathematics** (2020)
  Awarded for the best final year project in the Faculty of Engineering with an outstanding mathematical background.

- **W.P. Jayasekara Prize for the best student project in Electrical & Electronic Engineering** (2020)
  Awarded for the best undergraduate thesis in the Department.

COMPETITIONS AND EXTRA-CURRICULAR ACTIVITIES

Competitions

- **1st Place**: ACES Hackathon (2018) University of Peradeniya
- **1st Place**: Innovators (2016) University of Peradeniya

Volunteering

- **Shuttle Service Coordinator**: Coordinated the picking up and dropping off of students from the airport to the campus (2022).
- **STEM Instructor**: Workshops organized in rural areas in Sri Lanka (2016, 2017).

Sports

- **1st Runner-up**: Sri Lankan School Games-Chess (2009).

Societies

- **Board Member**: ECE Graduate Student Association, University of Maryland (2022).
- **Member**: Drama Society, University of Peradeniya (2016 - 2019).

Workshops

- **NSF ASI-2022**: Represented the University in a 2-week NSF-funded workshop on the theme of Industrial Risk Management held in France. (2022).

SKILLS

PROGRAMMING LANGUAGES	Python	MATLAB	C/C++
LIBRARIES	Tensorflow	Pytorch	Scikit-learn
CAD	AutoCAD	Proteus	Eagle
WORD PROCESSING	LateX	MS Office