SANJAYA HERATH

Email
Homepage
LinkedIn
Research Gate
GitHub

PROFILE

I am a self-motivated, hardworking, and responsible person who can adapt to all challenging situations. I am motivated by research and able to work well both in a team environment and as well as using my initiative. My research interests include signal and image processing, computer vision, and machine learning with several publications.

EDUCATION

- **University of Maryland, College Park** 2021-Present
  Ph.D. in Electrical and Computer Engineering
  Current GPA: 3.58/4.0
- **University of Peradeniya, Sri Lanka** 2015-2020
  B.Sc. in Electrical and Electronic Engineering
  GPA: 4.0/4.0 *(**Top** of the class)*
  (The complete degree program was conducted and assessed in English medium and accredited by Washington Accord)
- **Kingswood College, Sri Lanka** 2012-2014
  G.C.E. Advanced Level (Mathematics, Physics, and Chemistry)
  *(Ranked in the **TOP 20** overall in the country)*

PUBLICATIONS

CONFERENCE PAPERS

- **Convolutional Autoencoder for Blind Hyperspectral Image Unmixing** Nov 2020
  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
  15th Conference on Industrial and Information Systems (Presenter)
- **Multispectral imaging for automated fish quality grading** Nov 2020
  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
  15th Conference on Industrial and Information Systems
- **Transmittance Multispectral Imaging for Edible Oil Quality Assessment** Jun 2020
  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
  Imaging and Applied Optics Congress, Optical Society of America (Presenter)
- **Hyperspectral Imaging Based Method to Identify Potential Limestone Deposits**
  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 Dec 2019
  14th Conference on Industrial and Information Systems

JOURNAL PAPERS

- **Transmittance Multispectral Imaging for Reheated Coconut Oil Differentiation**
  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
  IEEE Access Jan 2022
- **Constrained Nonnegative Matrix Factorization for Blind Hyperspectral Unmixing incorporating Endmember Independence**
  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
  IEEE J. Selected Topics in Applied Earth Observations and Remote Sensing Nov 2021

Patents

- **A Multi Spectral Imaging System to Measure Transmittance Spectrum**
  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.
  Patent Sri Lanka No: 20936 (accepted) Jan 2022

PROJECTS

COURSE BASED PROJECTS 2017-2018

- **Color to Sound Mapping Device**
  Developed a color-to-sound mapping device for visually impaired people. The device was successfully tested on visually impaired students.
- **Password Protected Locker** 2018-2019
  Programmed a pic16f873A from scratch using assembly. Received A+ for the project.

FINAL YEAR THESIS 2019-2021

- **Hyperspectral Imaging for Remote sensing and agricultural applications**
  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**
  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.
- **Deep learning for hyperspectral unmixing**
  Noticed that deep learning has not been utilized extensively for the hyperspectral unmixing problem. Therefore, experimented with deep learning for the hyperspectral unmixing problem. Developed a Deep autoencoder architecture that generates competitive results.
- **Image Processing for fish quality Assessment**
  An automated system was not present to detect the fish quality in the Sri Lankan fisheries industry. Teamed up with NARA (National Aquatic Research lab) to develop a deep learning based method for real-time fish quality assessment. Resulted in an android app for real-time fish quality assessment.

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
- **Silver Medal-Sri Lankan Physics Olympiad**
  Organized by the institute of physics, Sri Lanka. 2014
- **Devadasan Challenge Trophy for Best All Rounder** 2014
  Highest school honor, awarded to one student per each class

WORK EXPERIENCE

- **Graduate Teaching Assistant at University of Maryland** Aug 2021- Present
  ENEE222-Elements of Discrete Signal Analysis
  ENEE436-Introduction to Machine Learning
  Conduct tutorial classes and lab sessions.
- **Temporary Instructor at University of Peradeniya** Aug 2020- Jul 2021
  Conduct tutorial classes on Engineering Mathematics for first-year students
- **Volunteer Instructor at University of Peradeniya** Jan 2020- May 2020
  Conduction of laboratory sessions for the first-year and second-year students
- **Engineering intern at Paraqum Technologies, Colombo** Feb 2019- May 2019
  Application and development of several signal processing algorithms for a biomedical project and development of standalone GUI programs

COMPETITIONS AND EXTRA-CURRICULAR ACTIVITIES

COMPETITIONS

- **1st Place-aces Hackathon** 2018
  ACES, Faculty of Engineering, University of Peradeniya
- **1st Place-Innovators** 2016
  Inventors' Club, University of Peradeniya.
- **4th Place-aces Coders v6.0** 2016
  ACES, Faculty of Engineering, University of Peradeniya
- **Best props Manager at Runner-up stage drama** 2019
  Ceylon Dramatic Society, University of Peradeniya

VOLUNTEERING

- **Mathematics and Science Instructor** 2016,2017
  Workshops organized in Kandy, Ratnapura, and Badulla
- **Volunteer – shuttle service** 2022
  Coordinated the picking up and dropping off of students from the airport to the campus.

SPORTS

- **1st Runner-up** 2009
  All Island School Games-Chess.

SOCIETIES

- **Vice President** 2013-2014
  Science Society and Astronomical Society, Kingswood College
- **Member** 2016-2019
  Drama Society and Music Society, University of Peradeniya
- **Board Member** 2022-Present
  ECE Graduate Student Association, University of Maryland

WORKSHOPS

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

SKILLS

Programming	Python, MATLAB, C/C++, Assembly
Libraries	Keras, TensorFlow, Pytorch, Scikit-learn
Technologies	Git, LLVM, Arduino, Raspberry Pi
Design	Proteus, Eagle, AutoCAD
Graphics	CorelDraw, Adobe Photoshop
Type Setting	LaTeX, MS Office
Languages	Sinhalese (native), English (professional)