Shehan Tharuka Senarath updated CV

Department of Electrical and Electronic Engineering
Faculty of Engineering
University of Peradeniya
Sri Lanka

Dedicated, well organized and energetic individual seeking an opportunity to continue studies and scientific research on signal processing and mathematics with the aim of introducing innovative ideas for the betterment of not only the engineering field but also the community.

Academic Qualification

Kingswood College, Kandy

Feb 2006 - Aug 2014

General Certificate of Education Ordinary Level Examination 2011
(Nine A's for all the subjects)
General Certificate of Education Advanced Level Examination 2014
Combined Maths, Physics, Chemistry (Island rank 220, Z-score 2.3527)

Faculty of Engineering - University of Peradeniya

Dec 2015 – Jul 2020

BSc Engineering (Hons) in Electrical and Electronic Engineering
The degree was conducted and assessed in English and accredited by Washington Accord
GPA 3.95 out of 4.0 (First Class)

Professional Experience

Sri Lanka Telecom PLC

Engineering Intern (Telecommunication and Wireless systems) Oct 2017 - Jan 2018
Wired (Copper, Fiber) and wireless (4G) Communication networks

I was able to become familiarized with installation, operation and maintenance of the secondary network of a telecommunication network. The training included areas such as Telephone lines, areal and underground communication lines, ADSL, IPTV, Fiber and 3G/4G wireless communication. Moreover, I was also able to get a hands-on experiences on fiber and ADSL system installations and maintenance.

Ceylon Electricity Board

Engineering Intern (Power systems and Electrical) Mar 2019 - May 2019
System Control, Generation, Transmission, Distribution, Communication and Design

During the internship program, I was fortunate to visit multiple generation, transmission, distribution stations throughout Sri Lanka and identify the arrangement of the power distribution system. I was able to study about the system planning, transmission line designs and power system controls.

Department of Electrical and Electronic Engineering - University of Peradeniya

Temporary Instructor Aug 2020 - present
Communication Laboratory , Power and Energy Laboratory

As a temporary academic staff member, I have demonstrated, instructed and supervised undergraduates in both the communication laboratory and Power and Energy laboratory, and I have been assigned as a teaching assistant for the courses - Communication Systems, Digital Signal Processing, Telecommunication and Wireless Systems, Electric Power and energy. Moreover, I have been allocated as the instructor in charge for the 300 level laboratories in which I handled lab related practicals and demonstrations such as scheduling, organizing and coordinating the other instructors.

Personal Information

Permanent Residence

E 277/1,
Koongahagda watta,
Nikapitiya,
Ussapitiya,
Sri Lanka,
20400.

E-mail

stsenarath@gmail.com
shehan.senarath@eng.pdn.ac.lk

Telephone

+94 71 165 3081
+94 35 225 9089

Links

ShehanSenarath - Google Scholar
ShehanSenarath - Github
ShehanSenarath - Linkedin

Interest

- Signal Processing
- Communication
- Machine Learning
- Mathematics

Projects and Research

Embedded Systems - Economically worth smart lecture room 2018

Implemented a prototype of smart lecture room system which was capable of identifying the number of students inside. The system automatically control the lighting intensity level and the temperature of the room based on the number of people inside and the locations of the people. The system comprises of PIC16F887A micro-controller and was coded with Assembly language. The main intention was to implement this method for the modern education system to make the tasks easier and to reduce the energy consumption.

Product Design - Wireless Audio Transmitter and Receiver System 2018

Designed and fabricated a wireless audio system comprising a transmitter and two receiver modules. Audio transmitter device could be plugged into a device so that audio signals coming out of the device could be transmitted to multiple receiver devices . Audio receiver devices were able to be connected to media output devices such as headphones, earphones or speakers. Different functions - Pause/Play/Stop - were added, and each device consisted of rechargeable battery pack. The product was presented in the Electrical and Electronic Engineering Research and Project Symposium 2018

Research Project - Digital Image Forensic Techniques for Identification of Image Tampering 2019 - 2020

The main objectives of this research is to identify the fake images using signal processing methods. The proposed methodology come up with localizing regions of forgery within an image tampered with an image forgery technique known as splicing which is generated by the spliced regions from different source images. To do this, the variation of noise levels and statistics of different segments in the tampered image were utilized. Then,the image was segmented into non-overlapped segments using Adoptive Centroid Placement based Simple Linear Iterative Clustering (SLIC) and the noise statistics of each segment was estimated. The estimated noise level of each segments are used to classify the segments where the segments with relatively different or deviated noise statistics are identified as forged regions. This proposed algorithm introduces a new graph based representation on the segmented image and then the clustering task is performed in the graph spectral domain using spectral clustering. For this method, the very important key point is non-requirement of supervisory training phase for the algorithm. And it does not depend on prior knowledge or intrinsic models.

Conference Papers

✔ "Adaptive Centroid Placement Based SNIC for Superpixel Segmentation", in proceedings of 5th Moratuwa Engineering Research Conference (MERCon - 2020), Moratuwa, Sri Lanka, July, 2020, E.D.G.J.B. Senanayaka; M.G.D.T. Morawaliyadda; K.A.S.T. Senarath; G.M.R.I.Godaliyadda and M.P.B. Ekanayake, (Published - https://doi.org/10.1109/MERCon50084.2020.9185361)

Abstract

✔ "A Feasibility study for identifying probabble mineral deposites through Hyper-Spectral Imaging", R.L.M.S. Ramanayake, W.A.N.D. Wickramasinghe, K.A.S.T. Senarath, A. Senaratne, G.M.R.I. Godaliyadda, H.M.V.R. Herath, M.P.B. Ekanayake . (To be published - https://gssl.sites.pdn.ac.lk)

Ongoing Research

✔ **Zone Mapping Algorithm to Identify the Potential Mineral Deposits in Sri Lanka Using HSI Datasets** - Mathematical and statistical concepts are being incorporated to develop an algorithm to identify the possible minerals such as limestone ,Ilmenite and other mineral deposits and abundances.

✔ **Food Quality assessment using MSI and RGB Systems** - MSI and Deep learning based model is being developed to estimate sugar adulteration level of tea.

✔ **A Study on Remote Battery Swapping Station with Multiple Energy Sources using Cost Optimization Algorithm** - the performance of a cost optimization algorithm for the energy management of a battery swapping station, which is a business venture that is capable of replacing the depleted batteries of electric vehicles with a charged battery.

Skills

Programming	▸ MATLAB ▸ Python
Certificate Courses	▸ Python ▸ Wireless Communications ▸ Network Communication ▸ Cloud Computing Basics (Cloud 101) ▸ Wind Energy ▸ Power Electronics
CAD Software	▸ CorelDraw ▸ Autodesk AutoCAD
Word Processing	▸ Latex ▸ MS office
Design & Simulator Software	▸ Proteus ▸ Autodesk Eagle

Achievements

- Place of 3rd in the batch of "E14" Electrical and Electronic Engineering, University of Peradeniya. (2020)
- Nominated for the W.P. Jayasekara Prize for the best undergraduate project in the Electrical and Electronic department. (2020)
- Nominated for the Migara Rathnatunga Trust Awards for industrial training for university undergraduates among all universities. (2020)
- Mahapola merit scholarship for performance in GCE Advanced Level examination. (2014-2020)
- Awarded for being among top results in GCE Advanced Level examination in Mathematical section in Kingswood College, Kandy. (2014)
- Provincial award for being among top results in GCE Ordinary Level examination. (2011)
- Under 17, All Island Hockey Champions. (2010)
- Under 15, Kandy district 7 a side Hockey Winners. (2nd Runner-up 2009, Runner-up 2010)
- Under 15, Hockey Best Goal Keeper in Kandy district. (2010)
- Under 15, All island Baseball championship. (4th Place - 2010)

Contributions

- Volunteer Instructor at Department of Electrical and Electronic, University of Peradeniya - Conducting laboratory sessions for first year students. (2019-2020)
- Member - Electrical and Electronic Engineering Society, EEES. (2018-2020)
- Student member of the Institution of Engineers Sri Lanka, IESL : S-23192. (2017-2020)
- Accociate member of the Institution of Engineers Sri Lanka, IESL : AM-26926. (2020-present)
- Accociate Engineer of Engineering Council, Sri Lanka, ECSL : 213250. (2020-present)
- Contributed to the Arunalla social service program - participated in activities to conduct Maths and Science seminar series for grade 9-11 students, provided scholarships for students in rural schools, developed infrastructure in a selected rural school and carried out a till program. (2015-2020)
- Hockey Player from under 13 to under 19 - Kingswood College. (2006-2013)
- Baseball Player from under 15 to under 17 - Kingswood College. (2009-2012)
- Games captain - Kingswood College : Harrow House. (2013-2014)
- Chief Organizer - Kingswood College : Science Society. (2012-2014)
- Vice President - Kingswood College : Arts Society. (2012-2014)
- Founder of Kings' Science Super League annual cricket tournament : KSSL. (2012-present)
- Committee member- Kingswood College : Para-Normal Society. (2012-2014)

References

Dr. G.M.R.I. Godaliyadda
Senior Lecturer
Dept of Electrical and Electronic,
Faculty of Engineering,
University of Peradeniya.
roshangodd@ee.pdn.ac.lk

Dr. H.A.Suraweera
Senior Lecturer
Dept of Electrical and Electronic,
Faculty of Engineering,
University of Peradeniya.
himal@ee.pdn.ac.lk

Dr. M.P.B. Ekanayake
Senior Lecturer
Dept of Electrical and Electronic,
Faculty of Engineering,
University of Peradeniya.
mpb.ekanayake@ee.pdn.ac.lk