Isuri Devindi

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Interests

Computer Vision Deep Learning Neuromorphic Computing Low Complexity Algorithms

Education

University of Peradeniya | **BSc.Eng(Hons.) in Computer Engineering** 2018 Nov - Present
Field Rank - **1 / 60** GPA: **4.00 /4.00**

Hillwood College, Kandy | **G.C.E. Advanced Level Examination** 2004 - 2017
District Rank - **6 / 2784** , National Rank - **113 / 32075** Z-Score: **2.2768**

Publications

Comprehensive Dataset of Annotated White Light Images of Oral Cavity and Novel Web Tool for Image Annotation |

Sashini Liyanage, **Isuri Devindi**, Dinura Dissanayake, Achintha Harshamal, Nadisha Piyarathne, Sumudu Rasnayaka, Kalani Hettiarachchi, Ruwan Jayasinghe, Roshan Ragel, Dhanushki Mapitigama, Isuru Nawinne

On review: Scientific Reports

Application of White Light Images and Artificial Intelligence for the Early Detection of Oral Cancer in Sri Lanka |

Isuri Devindi, Sashini Liyanage, Dinura Dissanayake, Achintha Harshamal, Nadisha Piyarathne, Sumudu Rasnayaka, Kalani Hettiarachchi, Ruwan Jayasinghe, Roshan Ragel, Dhanushki Mapitigama, Isuru Nawinne

Intended publisher: Oral Oncology Reports

Low Complexity Algorithm for Real-time ECG Signal Compression

Isuri Devindi, Sashini Liyanage, Titus Jayarathna, Roshan Ragel
On review: IEEE Transactions on Biomedical Engineering

Achievements

NBQSA 2023 | **National ICT Awards** 2023
Bronze award in Tertiary Student Projects (Technology) (Out of 46 teams) for the project "Oral Cavity Image Annotation and Cancer Prediction from White Light Images"

IEEEXtreme 14.0 | **24 hour global algorithmic programming competition** 2020
Country Rank – 68, Global Rank – 724 (Out of 2000+ teams)

Hacktitude | **An inter-university hackathon organized by the company 99x** 2022
Rank – 32 (Out of 200+ teams)

Hackfest | **An inter-university hackathon organized by the University of Peradeniya** 2022
Rank (Healthcare category) – 1 (Out of top 20 teams)

Experience

Visiting Research Assistant Supervised by Prof. Archan Misra 2023 Jan - 2023 May
Pervasive Sensing & Systems Lab, Singapore Management University
Exploring spatiotemporal compressive sensing techniques for event-based data fed into and processed by Spiking Neural Networks.

Casual Instructor | ***Department of Computer Engineering, University of Peradeniya*** 2021 - 2022
CO321 Embedded Systems, CO253 Programming and Networking, CO222 Programming Methodology
Supervised 2hr long weekly lab sessions based on C programming language and programming an ATmega328P microcontroller in C language

Technical article writer | **Medium blog** | **Syncfusion blog** | **Enlear Pvt. Ltd.** 2021 Feb - Present

Projects

Oral Cancer Prediction System from White Light Images | *Group* | 2022 - Present

- A web-based tool that minimizes the delay of diagnosing high-risk oral cancer patients by incorporating an automated oral cancer prediction model trained on a white light image database derived from Sri Lanka.
- Contribution:
  - Developing a segmentation model to extract the oral cavity region in an image.
  - Developing an ensemble machine learning model to predict oral cancer using multiple data sources such as images and risk factors.
- Technology: TensorFlow, Keras
- Techniques: **U-Net, DenseNet, XGBoost**

Low Complexity Algorithms for Arrhythmia Detection | *Group* | 2023 May - Present

- A pre-packaged software solution containing a set of low-complexity algorithms for QRS-peak detection and ECG signal compression addressing the null-power consumption environments, along with a Spiking Neural Network implementation to classify ECG beats based on arrhythmia conditions.
- Technology: C, Python, snnTorch
- Techniques: **Leaky-boundary based QRS-peak detection, Quantization, Spiking Neural Networks**

Reconstructing highly degraded license plates | *Group* | 2022 Feb - 2022 April

- Demonstration of the efficacy of traditional image processing techniques to reconstruct highly degraded images of license plates obtained from CCTV footage, when the source of degradation is unknown.
- Technology: Python, OpenCV, EasyOCR
- Techniques: **Otsu thresholding, Morphological transformation, Contouring, Spatial and Frequency domain filtering and Degradation modeling(Wiener Filter)**

Remote proctoring system | *Group* | 2021 July - 2022 Nov

- A single device with a video streaming facility that integrates the hardware and software components needed to conduct virtual proctoring of an examination in a university.
- Contribution: Designing a scalable web application for administrators of the university and proctors of examinations. Developing the hardware solution for the device using a Raspberry Pi microcontroller.
- Technology: React.js, Express.js, MongoDB, Node.js
- Techniques: Handling and **synchronization** of API requests & responses with promised-based library **Axios**.

Technical Skills

Languages	Python, C/C++, Java, JavaScript, HTML/CSS, SQL, Verilog HDL, ARM Assembly
Libraries	Pytorch, snnTorch,TensorFlow, Keras, OpenCV, NumPy, Matplotlib, pandas
Frameworks	React.js, Express.js
Developer Tools	Git, Google Cloud Platform, VS Code

Soft Skills

Technical Writing: Currently working as a technical writer at Enlear Private Limited, writing content related to software application development.

Public Speaking: Moderated several virtual events organized by IET On Campus University of Peradeniya and virtual and physical events organized by the Faculty of Engineering, University of Peradeniya.

Extra-curricular Activities & Leaderships Held

Member of the Web Consultation team of University of Peradeniya	2020 - Present
Secretary in IET on Campus of the University of Peradeniya	2022 - 2023
President of the Music Society of the University of Peradeniya	2021 - 2022

References

Prof. Roshan G. Ragel | roshanr@eng.pdn.ac.lk
Head of Department, Department of Computer Engineering, Faculty of Engineering, University of Peradeniya, Sri Lanka
Dr. Isuru Nawinne | isurunawinne@eng.pdn.ac.lk
Senior Lecturer, Department of Computer Engineering, Faculty of Engineering, University of Peradeniya, Sri Lanka