SASHINI LIIYNAGE

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INTERESTS

Machine Learning   Deep Learning   Computer Vision   Low Complexity Algorithm

EDUCATION

BSc. (Hons.) in Computer Engineering   Nov 2018 – Present
Final undergraduate in Computer Engineering at the University of Peradeniya.   **cGPA: 3.95/4.00**

G.C.E Advanced Level Examination   2017
Physics(A), Chemistry(A), Combine Mathematics(A)   National Rank - 80/32000+

PUBLICATIONS (in preparation)

1. **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
   Intended publisher: Scientific Reports
   Poster

2. **Application of White Light Images and Artificial Intelligence for the Early Detection of Oral Cancer in Sri Lanka**
   Isuri Devindi, Dinura Dissanayake, Sashini Liyanage, Achintha Harshamal, Nadisha Piyarathne, Sumudu Rasnayaka, Kalani Hettiarachchi, Ruwan Jayasinghe, Roshan Ragel, Dhanushki Mapitigama, Isuru Nawinne
   Intended journal: Oral Oncology Reports
   Poster

3. **Low Complexity Algorithm for ECG Signal Compression**
   Isuri Devindi, Sashini Liyanage, Titus Jayarathna, Roshan Ragel
   Intended publisher: IEEE Journal of Biomedical and Health Informatics
   Project Page

PROJECTS

1. **Low-complexity Algorithm for Arrhythmia Detection** — Group — ○ G   May 2023 - 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.

   - Methods: **Signal filtering, Leaky-boundary based QRS-peak detection, Quantization, Spiking Neural Networks**

2. **Oral Cancer Prediction System from White Light Images** — Group — 📄 ▶   Apr 2023 - Present
   A web-based tool to reduce the delay in diagnosing high-risk oral cancer patients by incorporating an automated oral cancer prediction model trained on a white light image database derived from the Sri Lankan population.

   - Technologies: **DenseNet and an XGBoost classifier**, React.js, Express.js, flask framework
   - Contribution: Development of a web-based annotation tool and Development of the ensemble machine learning model to predict oral cancer using multiple data sources such as images and risk factors.

3. **Reconstructing highly degraded license plates** — Group — 📄   Feb 2022 - Apr 2022
   A procedure to extract a number plate from an image and reduce several noises due to low resolution, high or low lighting, and motion blur to reconstruct highly degraded images of license plates.

- Technologies: Python, OpenCV, EasyOCR
- Techniques: **Morphological transformation, Contouring, Spatial, and Frequency domain filtering**

4. **Remote Proctoring Device** — Group — ○ G   Jul 2021 - Nov 2022
A single device that integrates the hardware and software components needed to conduct an examination in online mode with no technical interruption.

- Technologies: ReactJS, ElectronJs, Nodejs, MongoDB, Rest API, AWS
- Contribution: Desktop app development, Hardware design

5. **8-bit single cycle processor** — Group — ○   Jan 2022 - Mar 2022
Implement a simple 8-bit single-cycle processor which includes a CPU with a data memory unit and data cache using Verilog HDL

- Technologies: **Verilog-HDL**

ACHIEVEMENTS

Bronze Award at the National ICT Awards   2023
"Oral Cavity Image Annotation and Cancer Prediction from White Light Images" group project won the Bronze award in the Student Category at the National ICT Awards.

Professor E. F. Bartholomeusz Prize for Second Year Engineering Mathematics   2022
Best student in all engineering specialties who achieves the highest average marks in the engineering mathematics modules offered throughout the year.

ACES Coders v9.0   2022
An inter-university 12-hour coding competition organized by the University of Peradeniya. Rank – 06 (Out of top 120 teams)

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

TECHNICAL SKILLS

Programming Languages:	Python, Javascript, Java, C, Verilog HDL, ARM assembly, Ballerina
Libraries & framework:	Tensorflow, Scikit-Learn, Keras, cv2, Scipy
Software Development:	HTML5, CSS, Bootstrap, ReactJS, VueJS, ElectonJS, NPM, SQL, MongoDB

WORK AND TEACHING EXPERIENCE

Software Engineer Internship   Dec 2022 - May 2023
Former software engineer intern at WSO2 software company

Casual instructor - Department of Computer Engineering, University of Peradeniya
CO224 Computer Architecture, CO321 Embedded Systems, CO325 Computer & Network Security   2021 - 2022

EXTRACURRICULAR

Member of the Rotaract club of university of Peradeniya	2019 - Present
Member of Design Team of ACES and Hackers' Club	2022
Member of the Dramatic Society of the University of Peradeniya	Dec 2019 - Present

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.