Sashini Liynage

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INTERESTS

Machine Learning Deep Learning Computer Vision Biomedical AI

EDUCATION

BSc. (Hons.) in Computer Engineering (First Class Honours) Nov 2018 - Dec 2023
University of Peradeniya, Sri Lanka **GPA: 3.95/4.00**

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

PUBLICATIONS

1. **A Novel ECG Compression Algorithm Using PWM-Integrated Quantization for Low-Power Real-Time Monitoring** | Project Page | Report
   Isuri Devindi* , Sashini Liyanage*, Titus Jayarathna, Janaka Alawathugoda, Roshan Ragel
   Journal: Nature - Scientific Reports (IF-4.3)
   Status: Peer review - Final stage

2. **AI-Assisted Early Diagnosis of Oral Cancer using Multimodal Deep Convolutional Neural Networks** | Poster | YouTube
   Isuri Devindi, Dinura Dissanayake, Sashini Liyanage, Achintha Harshamal, Nadisha Piyarathne, Sumudu Rasnayaka, Kalani Hettiarachchi, Ruwan Jayasinghe, Roshan Ragel, Dhanushki Mapitigama, Isuru Nawinne
   Journal: ScienceDirect - Oral Oncology (IF-4.0)
   Status: Peer review - Final stage

3. **A Comprehensive Dataset of Annotated Oral Cavity Images** | Poster | Dataset | YouTube | Software
   Nadisha Piyarathne, Sashini Liyanage, Sumudu Rasnayaka, Kalani Hettiarachchi, Isuri Devindi, Dinura Dissanayake, Achintha Harshamal, Dhanushki Mapitigama, Isuru Nawinne, Roshan Ragel, Ruwan Jayasinghe
   Journal: IEEE Access (IF-3.4)
   Status: Peer review - Final stage

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)

WORK AND TEACHING EXPERIENCE

Research Assistant April 2024 - present
Research assistant at Multidisciplinary AI Research Center at the University of Peradeniya, Sri Lanka.

Co-supervisor Jan 2024 - present
Co-supervising undergraduate project: Automated Medical Image Annotation for Dataset Building

Instructor Jan 2024 - April 2024
Instructor at the Department of Computer Engineering, University of Peradeniya

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 - 2023

PROJECTS

1. **Agent-Based Modelling for Social Dynamics and Impact Assessment** March 2024 - Present
   Modelling human behaviour by utilizing GPS data along with mathematical models and advanced machine learning algorithms within Agent-based Models (ABMs)
   - Methods: **DBSCAN clustering, spectral clustering, data structure and algorithms, mathematical models**
2. **Non-Invasive Accelerometric Systems for Fetal Movement Monitoring** March 2024 - Present
   A non-invasive, lightweight, and low-cost wearable device capable of recording signals from the mother's abdomen, complemented by an AI algorithm designed to detect fetal kick counts, enables continuous monitoring outside clinical settings.
   - Methods: **Signal filtering, STFT, LSTM, CNN**
3. **Reconstructing highly degraded license plates** 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** 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** 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**

EXTRACURRICULAR

Member of the Rotaract club of University of Peradeniya 2019 - 2023
Member of Design Team of ACES and Hackers' Club 2022
Member of the Dramatic Society of the University of Peradeniya Dec 2019 - 2023

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.