DILSHARA HERATH

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Kandy, Sri Lanka.

PERSONAL PROFILE

A self motivated and passionate individual who has a palpable desire to research into machine learning, deep learning and computer vision related areas. Experience in AI related projects, presenting at conferences and constructing research papers. Aiming to contribute innovative projects, research initiatives addressing global challenges and advancing human knowledge.

EDUCATION

Bachelor of Electrical and Information Engineering - University of Ruhuna   2020 - Present
- **GPA: First Class Honours (3.70/4.00 - End of third year)**

ESOFT Metro Campus   2018- 2019
- Computer Software Engineering, Diploma

Trinity College Kandy (Grade 1-13)   2005- 2018
- General Certificate of Education Advanced Level - 2018
  - 2A's 1B

RESEARCH EXPERIENCE

Extremely Low Frequency (ELF) based Sensing and AI/ML-based Identification of   2024 - Present
Micro-UAS (Final Year Project)
- Developed a drone detection system by utilizing ELF(Extremely Low Frequency) signals emitted by drone motors and Deep learning.
- Developed an antenna with analog front end to collect ELF signals, implemented the analog to digital conversion (ADC) and digital signal processing (DSP) to pre-process the data.
- Developed a convolutional neural network to classify images of the SCF images given as the output of the DSP process.
- Currently preparing a manuscript for submission to a peer-reviewed journal, detailing the comprehensive research and findings from the project.

PUBLICATIONS AND PRESENTATIONS

- Published a paper titled as "AI-Enabled RF-Sensing for Radar Detection of Body-Worn IEDs", SoutheastCon 2024, Atlanta, GA, USA, 2024, (pp. 644-649, doi: 10.1109/SoutheastCon52093.2024.10500269.) - Link
- Presented the accepted paper at the IEEE International Conference SoutheastCon 2024, joining the conference held in Atlanta, USA virtually.
- Abstract namely, "AI Enabled Detection of Body-Worn Improvised Explosive Devices", getting accepted at the USF Artificial Intelligence + X Symposium organized by University of South Florida.
- Created the Research Poster for the research project accepted as an abstract.

TEACHING EXPERIENCE

Teaching and Conducting Laboratory Practicals to First Year Students   2024 Feb-Present
- EE4301 - Communication Systems 1
  - Lab 1 - Amplitude Modulation
  - Lab 2 - Frequency Modulation (FM)
  - Lab 3 - Digital Carrier Wave Modulation (ASK, FSK, PSK)
  - Lab 4 - Pulse Code Modulation
- EE2201 - Fundamentals of Electronics
  - Lab 1 - Introduction to Resistors, Capacitors, Diodes and Bipolar Junction Transistors (BJTs)
  - Lab 2 - Combinational Logic Circuits
  - Lab 3 - Sequential Logic Circuits

PROJECTS

AI-Enabled RF-Sensing for Radar Detection of Body-Worn IEDs   2023 March-2023 Dec
- Designed a deep neural network using Tensorflow to identify IED (Improvised Explosive Devices).
- The neural network consist of 7 dense layers. Obtained a 96% of average detection accuracy.

Breast Cancer Prediction using Machine Learning   2024 Feb-2024 May
- Developed a machine learning model for breast cancer prediction for the Wisconsin dataset.
- Trained Support Vector Machine, K-Nearest Neighbors, Decision Trees, Random Forest machine learning models to compare and choose the best fit model for the dataset.

Classification and Regression models build for various datasets   2024 Jan-2024 Present
- Analyzing the data using EDA(Exploratory data analysis) and preprocessing the data to minimize the computation power and optimally build the model.
- Building ML models for various datasets and applications.

News Research Tool - Equity Research Analysis ChatBot Model   2024 July-Present
- Building a chatbot research tool using LangChain, OpenAI and streamlit.

Intelligent Patient Care Platform Website and Mobile App Development   2023 Feb - 2023 Nov
- Mobile app development using Flutter, Front End Development using React.

Hand Written Digit Identification using Computer Vision   2024 Feb - 2024 May
- Built a CNN model using OpenCV to detect and classify hand written digits.
- Real time prediction of digits

INDUSTRIAL EXPERIENCE

Sri Lanka Telecom - Trainee Cybersecurity Engineer   2023 Oct-2024 jan
- Worked as a trainee engineer at the Sri Lanka's largest Telecommunication Network Provider, SLT for the internship period.
- Worked in the Cybersecurity Section, Cloud and IP Network Operations sectors during the internship period.

SKILLS AND CERTIFICATION

- Programming Languages and Frameworks: Python, R, C++, MATLAB, TensorFlow, PyTorch, Keras
- Data Manipulation and Analysis Tools: NumPy, Pandas, Scikit-learn, OpenCV
- Visualization Tools: Matplotlib, Seaborn.
- Deep Learning and Machine Learning based knowledge: Supervised and Unsupervised Learning, Convolutional Neural Networks, Natural Language Processing.
- Software and Development Tools: Git, Docker, Jupyter Notebook, Linux and cloud platforms(AWS)
- Statistical analysis, Signal Processing and Mathematical knowledge for Machine learning based applications and models.
- Soft Skills: Communication, Teamwork and Collaboration, Critical Thinking.
- Certifications
  - Supervised Machine Learning: Regression and Classification - Certificate
  - AI/ML Engineer - Stage 1 - Certificate
  - Introduction to Generative AI - Certificate
  - Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning - Certificate
  - Foundations: Data, Data, Everywhere - Certificate
  - Programming for Everybody (Getting Started with Python) - Certificate
  - AWS Cloud Technical Essentials - Certificate
  - Blockchain Basics - Certificate

RELEVENT RESEARCH SKILLS

- Literature Analysis: Expertise in critically analyzing research literature to an outstanding standard, with a strong ability to distill complex concepts and findings.
- Research Publication: Proven interest and experience in contributing to research publications, reflecting a commitment to advancing knowledge within the engineering field.
- Problem Solving: Meticulous and thorough approach to solving complex engineering problems.

AWARDS AND ACHIEVEMENTS

- Applying for the Dean's List Awards for the 5, 6 semesters.
- Working in a national project of AIESEC Sri Lanka namely, NATCon 2022 and raising the biggest partnership for the conference with Sri Lankan Rs.350,000, by working as the Organizing Committee Vice President for Partnership Development.
- Applying for the IEEE Signal Processing Society (SPS) scholarship with the recommendation of the faculty board lecturers.

EXTRACURRICULAR ACTIVITIES

Captain of the Engineering Faculty Soccer team   2023-2024
- Played for the University Soccer team
- Held the Vice-Captain for the year 2022 and won the Inter-Faculty Football championship.

Member of the Trinity College Soccer Team   2011-2016
- Played for under 13, 15, 17, and 18 for the school soccer team
- Obtaining 3rd place - Central province soccer tournament
- Getting selected to the All Island Soccer Championship 2015 held in Jaffna.

President - Telecommunication and Networking Circle Faculty of Engineering   2024
- Organized an Introduction to Cloud platform workshop.
- Working with the Career Fair Organization team for making partnerships.

Volunteer of the IEEE Student branch   2022-2023
- Organizing university events organized by IEEE student branch of University of Ruhuna.

Organizing Committee Vice President for Partnership Development for the national   2022
project NATCON 2022 for AIESEC Sri Lanka

Leadership positions in AIESEC in the University of Ruhuna   2021-2022
- Team Leader for the Information Management team under the division Product Marketing and IM.
- Team leader for International Relations under the section Outgoing global Talent/Teaching.
- Organizing Committee Vice president for External Relations for the project Youth Space organized by AIESEC in University of Ruhuna. Was able to raise the biggest partnership with AOD Colombo (Academy Of Design) for the event.

Gaveshakayo Hiking club of University of Ruhuna   2021-2024
- Editor of the Gaveshakayo hiking club of university of Ruhuna.(2023)

Experienced Hiker   2018-2024
- Covered 60+ hikes and waterfall hunting in Sri Lanka.
- Started a new YouTube Channel namely, 'Dela Traveldiary' which brings up Cinematic Travel Video content.

REFERENCES

Dr. Chatura Seneviratne

Senior Lecturer of Department of Electrical and Information Engineering,
University of Ruhuna, Sri Lanka.
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Relationship - Project Supervisor, Academic Advisor

Dr. Arjuna Madanayake

Associate Professor of Electrical and Computer Engineering
Florida International University, USA.
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Relationship - Project Supervisor