RUSIRU THUSHARA

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PROFILE

A final year computer engineering undergraduate with national-level hackathon wins since 2019 and over 3 years of experience in software development. A quick learner with a strong fundamental knowledge in algorithmic programming, computer vision and a passion for finding simple, innovative solutions to complex real-world problems.

RESEARCH INTERESTS

- Computer Vision
- Self-Supervised Learning
- Open World
- Video Modeling
- Bio Informatics

EXPERIENCE

Wadduwage Lab, Harvard University, USA *Jan 2022 – Present*
Remote Research Fellow - Full Time Internship

Developed deep learning-based object detection algorithms for DNA damage repair toxicology assays to detect gamma H2AX foci in cellular nuclei images and detecting and quantifying homologous recombination events in rare fluorescent mutant cells deep within the tissue of RaDR mice.

BioMedInfo Lab, University of North Florida, USA *Jan 2022 – Present*
External Research Intern - Part Time
Developing deep learning based algorithms for Automated Protein Function Prediction on Human Phenotype Ontology.

SternX Engineering (Pvt) Limited *March 2021 – Present*
Software Team Lead - Self Employed
Team leader of an eight-member software developer team who follows Scrum methodologies to deliver web and mobile applications for clients.

Instructor and Teaching Assistant | University of Peradeniya *2020 –Present*
CO322 : Data Structures and Algorithms for 3rd year Computer Engineering undergraduates
CO324 : Network and Web Application Design for 3rd year Computer Engineering undergraduates
CO321 : Embedded Systems for 3rd year Computer Engineering undergraduates
CO253 : Programming and Networking for Electrical and Electronic Engineering undergraduates
GP106 : Computing for all 1st year undergraduates

EDUCATION

University of Peradeniya, Sri Lanka *Nov. 2017 – Present*
Undergraduate in B.Sc. Engineering(Hons.) Computer Engineering **CGPA: 3.80/4.00**

SPARK X Professional Development Program | Spark Academy, Sri Lanka *Mar 2021 - Sep 2021*
A 6-month industry readiness program for software engineers that includes technical modules like developing and delivering real-world applications, creative problem solving, and soft skills like empathy, communication, leadership, professionalism, and ethics. Earned a full scholarship during the selection process.

MOOCs

Deep Learning Specialization | deeplearning.ai | Coursera *2020*
AI for Medicine Specialization | deeplearning.ai | Coursera *2020*
Data Structures and Algorithms Specialization | UC San Diego | Coursera *2020*
AWS Computer Vision: Getting started with GluonCV | AWS | Coursera *2020*

HONORS & AWARDS

1st Place of Code Squad 3.0 (of 150+ teams) *Nov. 2022*
6 hour competitive programming competition for university undergraduates in Sri Lanka.

2nd Runner up of MoraXtreme 7.0 (of 180+ teams) *Oct. 2022*
12 hour competitive programming competition for university undergraduates in Sri Lanka.

5th National rank of IEEEXtreme 16.0 (of 6300+ global teams) *Oct. 2022*
24 hour competitive programming competition for university undergraduates worldwide.

1st Runner up of MoraXtreme 6.0 (of 180+ teams) *Oct. 2021*
12 hour competitive programming competition for university undergraduates in Sri Lanka.

1st Runner up of Douthan 1.0 (of 80+ teams) *Feb. 2021*
12 hour competitive programming competition for university undergraduates in Sri Lanka.

208th world rank of IEEEXtreme 15.0 (of 5500+ global teams) *Oct. 2021*
24 hour competitive programming competition for university undergraduates worldwide.

1st, 2nd, 1st Country Rank in Hack the Interview IV,V,VI (Asia Pacific) *2020*
60 hours competitive coding contest on hackerrank
Placed 1st, 2nd, 1st country rank and 88/4353, 343/3077, 195/2530 respectively in Asia Pacific region

2nd Runner up of HackDown 2020 (of 200+ teams) | Competitive programming competition *Apr. 2020*

2nd Runner up of hackStat 2.0 (of 90+ teams) *Oct. 2019*
Competition in data analysis and prediction on an insurance data set.

2nd Runner up of UoJCoders v1.0 (of 100+ teams) *March 2019*
Competitive programming competition for university undergraduates in Sri Lanka.

Top 20 National rank of IEEEXtreme 14.0 (of 2000+ global teams) *Oct. 2020*
24 hour competitive programming competition for university undergraduates worldwide.

1680th global rank of Facebook Hacker Cup 2020 (of 32500+ global participants) *July 2020*

Top 20 country rank of Google Code Jam, Hash Code, Kick Start *2019 - 2020*

Gold Medal in Sri Lankan Physics Olympiad | National Rank - **2nd**, Score : **96/100** *2016*
An annual competition held among high school students to select delegations for the APhO and IPhO.

PROJECTS

Open World Object Detection and Discovery 2022 - Present

Final Year Thesis Project
Advisors - Prof. Salman Khan, Prof. Roshan Ragel, Eng. Gihan Jayatilake

- *Investigation of self-supervised, contrastive learning approaches on open-world object detection for unknown object clustering.*
- *Usage of Vision Transformers for object detection with incremental learning.*

Deep Learning based Algorithms for Gamma H2AX Foci Detection and Analysis 2022 - Present

Advisors - Dr. Dushan N. Wadduwage, Prof. Bevin P. Engelward

- *Investigation on leveraging deep learning approaches for detecting and quantifying homologous recombination events in rare fluorescent mutant cells deep within the tissue of RaDR mice*
- *Usage of deep learning architectures for object detection, classification, and segmentation*

Protein Function Prediction with Human Phenotype Ontology 2022 - Present

Advisors - Prof. Indika Kahanda

- *Exploring deep learning approaches for categorize human abnormal phenotypes and their semantic relationships.*
- *Usage of Graph Transformer Networks(GTNs) for predicting HPO annotations of human protein.*

Prediction of Depths, Normals, and Surface Curvature from RGB Images using CNNs *2021*

Advisors - Dr. Upul Jayasinghe, Eng. Sampath Deegalla

- *Applying deep neural networks for estimating the depth map, surface normals, and surface curvature from RGB images.*

Fuzzy Based Recommendation System for Research Area Selection *2021*

Advisors - Dr. Upul Jayasinghe

- *Developed a fuzzy-based recommendation system that suggests suitable research areas for students depending on the skills and interests of the student and the scope of the research area of the supervisors.*

Swarm Robots Platform *2021*

Obstacle bots that are localized with an overhead camera setup with the capability of positioning themselves without collisions forming challenging patterns.
Technologies: ***Django, OpenCV, Numpy, Three.js, CSS, HTML, MQTT, GRPC***
Techniques: ***Stochastic gradient descent, PID, Image processing, Encryption***

National Covid 19 Management System 2021

Full-stack web application showcasing country level, district level, hospital level, and overall patient statistics of daily Covid-19 updates and the patient management system.
Technologies: ***Java, Spring Boot, Spring Data JPA, Hibernate, Spring Security, React, PostgreSQL***

Airport Ticket Booking System *2020*

Web application and Mobile Application with a Database Management System for passengers and airports.
Technologies: ***Dart, MySQL, PHP, HTML, CSS***

Crossword Puzzle Game *2021*

An instant game developed for Facebook focusing children where they can select and solve a crossword puzzle.
Technologies: ***React.js***

TECHNICAL STRENGTHS

Languages	Python, Java, C/C++, JavaScript	**Modeling**	PyTorch, Scikit-Learn, NumPy, Pandas
Mobile Development	Native Android, Flutter	**Frontend**	Reactjs, Bootstrap, HTML/CSS
Databases	MySQL, PostgreSQL, MongoDB	**Backend**	Spring Boot, Nodejs, Expressjs, Django

EXTRA CURRICULAR

Teaching Data Structures and algorithms with Hackers' Club for all undergraduates at UoP *2020*

Creating coding problems for five HackerRank programming competitions of UoP *2020*

Volunteer teaching | Maths, Science and English at Omaththa College, Mathugama *2019 - 2020*

Captain | Main Chess Team, Taxila Central College, Horana, Sri Lanka 2008 - 2016
Have won multiple achievements including 1st runner-up in district level

Senior House Captain | Taxila Central College, Horana, Sri Lanka *2015*

REFERENCE

Dr. Dushan N. Wadduwage wadduwage@fas.harvard.edu
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