RUSIRU THUSHARA

✉ thusharakart@gmail.com   🎓 google scholar/rusiru   🌐 portfolio   📞 +971 567131469

in linkedin/rusiru-thushara   🐙 github/thusharakart   Ⓗ hackerrank/thusharakart

PROFILE

As an MS student at Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), I specialize in Vision Language Modeling, building upon a solid foundation in Computer Vision and Machine Learning. My passion for technology is demonstrated through a history of success in national-level hackathons and a knack for innovative problem-solving. Eager to embrace new challenges, I continuously seek opportunities that advance my expertise in the cutting-edge domains of AI.

RESEARCH INTERESTS

- Computer Vision
- Self-Supervised Learning
- Video Modeling
- Vision-Language

EXPERIENCE

Wadduwage Lab, Harvard University, USA   *Jan. 2022 – July 2022*
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 – July 2022*
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 – 2023*

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

Mohamed bin Zayed University of Artificial Intelligence, UAE   Aug. *2023 – Present*
M.Sc. in Computer Vision   **CGPA: 3.90/4.00**

University of Peradeniya, Sri Lanka   *Nov. 2017 – Feb. 2023*
B.Sc. Engineering(Hons.) Computer Engineering **CGPA: 3.85/4.00**

SPARK X Professional Development Program | Spark Academy, Sri Lanka   *March 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.

PUBLICATIONS

PG-Video-LLaVA: Pixel Grounding Large Video-Language Models 🎧 📄 🌐
2023

Shehan Munasinghe*, **Rusiru Thushara***, Muhammad Maaz, Hanoona Rasheed, Salman Khan, Mubarak Shah, Fahad S. Khan   *equally contributing first authors
- Extends image-based LLMs to videos understanding, incorporating audio transcripts for enhanced context understanding, introducing a baseline framework and benchmark for conversation-driven spatial grounding.

Quantification of Cells in Native Tissues with Object Detection and Weak Supervision 🌐
2023

R. Thushara, J. Pradeepkumar, J. Corrigan, B. P. Engelward, D. N. Wadduwage
- 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
- Abstract accepted for **oral presentation at the Optica Imaging Congress 2023**

Real-Time Multiple Dyadic Interaction Detection in Surveillance Videos in the Wild 🌐
2023

I. M. Insaf, A. A. P. Perera, **R. Thushara**, G. M. R. I. Godaliyadda, M. P. B. Ekanayake, H. M. V. R. Herath, J. B. Ekanayake
- Detecting and classifying two-person interactions in public areas, aiding social distancing efforts for pandemic management.
- This first-of-its-kind model combines human skeleton extraction with the X3D-M+Attention classifier, showing high accuracy in diverse settings for controlling respiratory disease spread.
- Accepted at **International Conference on Industrial and Information Systems, ICIIS**

RESEARCH PROJECTS

Open World Object Detection and Discovery
2022 - 2023

Final Year Thesis Project | University of Peradeniya
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.*

Protein Function Prediction with Human Phenotype Ontology
2022

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.*

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** *2016*
An annual competition held among high school students to select delegations for the APhO and IPhO.

PROJECTS

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**

Crossword Puzzle Game *2021*

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