

OSHAN MUDANNAYAKE

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RESEARCH INTERESTS

Reinforcement Learning | Machine Learning | Artificial Intelligence
Game Theory | Computer Games
Computer Vision

EDUCATION

[Reading] University of Moratuwa Jan. 2023 - Present
M.Sc in Data Science & AI

University of Colombo School of Computing Feb. 2016 - Feb. 2020

B.Sc (Hons) in Computer Science

First Class Honors with a GPA of 3.61/4.0 (Top 5%)

Ranked 6th over 156 CS students

Thesis: “*Summarization of Large Scale Streaming Graphs*” (Grade A)

- Chair of IEEE Student Branch
- Core team member of Mozilla Club
- Member of CompSoc
- Instructor of Exploration Club
- Batch representative at IUD

Maliyadeva College Jan. 2001 - Dec. 2014

G.C.E. Advance Level Examination - Physical Science Stream

- President of Robotics Club
- Team Lead of Hardware and Networking Group

PUBLICATIONS

[**Journal**] **O. Mudannayake***, D. Rathnayake*, J. D. Herath, D. K. Fernando and M. Fernando, “Exploring Machine Learning and Deep Learning Approaches for Multi-Step Forecasting in Municipal Solid Waste Generation,” in IEEE Access, vol. 10, pp. 122570-122585, 2022, [doi: [10.1109/ACCESS.2022.3221941](https://doi.org/10.1109/ACCESS.2022.3221941)].

[**Conference**] **O. Mudannayake** and N. Ranasinghe, “kMatrix: A Space Efficient Streaming Graph Summarization Technique,” 2021 10th International Conference on Information and Automation for Sustainability (ICIAfS), 2021, pp. 161-166, [doi: [10.1109/ICIAfS52090.2021.9606137](https://doi.org/10.1109/ICIAfS52090.2021.9606137)].

* Equal contribution

RESEARCH EXPERIENCE

Research Assistant (Part-time) May. 2021 - Present
University of Colombo School of Computing Sri Lanka

Advisor: Dr. Noel Fernando

Working on modeling and prediction of municipal solid waste generation in Sri Lanka using machine learning techniques.

Senior Data Science Engineer (Full-time) Nov. 2021 - Present
WSO2 Sri Lanka

Data Science Engineer (Full-time) <i>WSO2</i>	Apr. 2021 - Oct. 2021 Sri Lanka
Researcher (Part-time) <i>Sustainable Computing Research (SCoRe) Lab</i> Advisor: Dr. Mohamed Nabeel Working on machine learning based internet domain entity matching and its applications.	Aug. 2020 - Dec. 2021 Sri Lanka
Software Engineer - IAM Team (Full-time) <i>WSO2</i>	Mar. 2020 - Mar. 2021 Sri Lanka
Designed and implemented the new CORS architecture for the Identity Server 5.11. Worked extensively on customer support in order to give solutions for the product issues.	
Research Intern (Full-time) <i>University of Colombo School of Computing - Distributed Computing Group</i> Advisor: Dr. Nalin Ranasinghe Carried out a research study on the topic, Machine Learning Over Encrypted Data.	Jul. 2018 - Jan. 2019 Sri Lanka
Student Developer <i>CERN-HSF - Google Summer of Code</i> Worked as a Google Summer of Code Participant in collaboration with <i>CERN-HSF</i> , <i>ownCloud</i> and <i>AARNet</i> to provide a prototype of a new web UI for CERNBox that will provide an immersive user experience.	May. 2018 - Aug. 2018 Remote
Software Developer (Contract) <i>Language Matters</i> Supervisor: Dr. Leonie Solomons Worked part time on developing an OCR solution for Sinhala language using Tesseract OCR Engine.	Jan. 2018 - Mar. 2020 Sri Lanka
Software Developer (Contract) <i>Dreamteam IT Solutions</i> Supervisor: Dr. Gihan Kuruppu Provided R&D solutions to industrial problems such as Bra Elasticity Analyzing System, Yarn Detection System and Glove Defect Identification System.	Feb. 2016 - Jan. 2017 Sri Lanka
Course Instructor (Contract) <i>Dreamteam IT Solutions</i> Conducted sessions for introductory robotics and Java 6.	Jan. 2016 - Jun. 2016 Sri Lanka

SCHOLARSHIPS & GRANTS

2021 - AutoML Fall School Scholarship
 2021 - Dataquest & AI Inclusive Scholarship
 2020 - Tokyo Data Science Full Scholarship
 2020 - Commonwealth of Learning Coursera Scholarship by Commonwealth of Learning, Canada
 2019 - HackZurich Travel grant
 2019 - AI Summer School Singapore Scholarship¹
 2018 - ownCloud Conference Travel grant by CERN and ownCloud
 2018 - Hack the North Travel grant

HONOURS & AWARDS

2019 - Merit Award - Datathon (SLIIT Codefest) by Sri Lanka Institute of Information Technology
 2018 - 1st place - Codezilla by Mozilla Campus Club of Uva Wellassa University
 2018 - 1st place - LetMeHack by Sabaragamuwa University
 2017 - Award of Appreciation - University of Colombo School of Computing - Special award on recognizing the outstanding achievements in hackathons and coding competitions.

¹I did not accept this scholarship as I could not attend the event due to university examinations.

2017 - 2nd place - Presistent Hackathon by Persistent Systems Lanka
 2017 - 2nd place - HACKiNTRA by University of Jaffna
 2017 - Finalist - CodeFest Designathon by Sri Lanka Institute of Information Technology
 2017 - Finalist - SS12 Asia by IEEE
 2017 - 3rd place - Dialog Game Dev Hackathon by Dialog Axiata
 2016 - 1st place - Mozilla Web Maker Party by Mozilla Club of University of Colombo School of Computing
 2016 - 2nd place - CodeFest Tertiary Hackathon by Sri Lanka Institute of Information Technology
 2016 - 1st place - IEEE preXtreme 1.0 by IEEE Student Branch of University of Colombo School of Computing
 2016 - 6th place - ACES Coders by University of Peradeniya
 2016 - 5th place - Code Expertz by University of Moratuwa

INVITED TALKS

Jul. 2021 - *kMatrix: A Space Efficient Streaming Graph Summarization Technique - IEEE ICIAfS 2021
 May. 2021 - Career guidance for undergraduates - UCSC ACM Student Chapter
 Dec. 2020 - A new CORS Valve for the WSO2 Identity Server - IAM Community Call by WSO2
 Oct. 2019 - Rust 101 - Hacktoberfest 2019 by Mozilla Club of UCSC
 Dec. 2018 - †Machine Learning over Encrypted Data - Sri Lanka Association for the Advancement of Science (SLAAS) Exhibition 2018
 Sep. 2018 - Lightning talk on Phoenix - ownCloud Conference 2018

* Research conference presentation

† Poster presentation

WORKSHOPS ATTENDED

Nov. 2021 - Online Asian Machine Learning School (OAMLS) at 13th Asian Conference on Machine Learning
 Nov. 2021 - AutoML Fall School
 Aug. 2021 - ACM Europe Summer School on HPC Computer Architectures for AI and Dedicated Applications by Barcelona Supercomputing Center and Universitat Politècnica de Catalunya
 Aug. 2021 - AI Summer School Singapore 2021
 Jul. 2021 - Qiskit Global Summer School 2021: Quantum Machine Learning
 Aug. 2020 - AI Summer School Singapore 2020

SELECTED PROJECTS

Realtime Property Evaluation of Large Streaming Graphs Jan. 2019 - Jan. 2020
Graphs, Graph Summarization, Python

Final year research project carried on the area of massive streaming graph summarization.

TessTA Jan. 2018 - Mar. 2020

ML, OCR, React, Java, Spring Boot, Hibernate, Tesseract, AWS

OCR Solution for Sinhala language using Tesseract OCR Engine.

Machine Learning over Encrypted Data Jul. 2018 - Jan. 2019

ML, Encryption, Tensorflow, Python, Google Cloud Platform

I worked on adding a layer over Tensorflow to facilitate machine learning on encrypted data over a distributed network of machines.

Intelligent Traffic Light System Feb. 2017 - Nov. 2017

Tensorflow, Python, Angular, NodeJS, Raspberry Pi, Arduino, Ionic Framework, GCP

Traditional time interval based traffic light system was automated to remove the involvement of traffic officers.

Bra Elasticity Analyzing System Mar. 2016 - Jan. 2017

Image processing, OpenCV, Java, Swing

Implemented a way to compare the elasticity of sports bras using image processing.

Yarn Detection System

Mar. 2016 - Jan. 2017

Image processing, OpenCV, Python, Raspberry Pi

Solution to detect the knots of yarn threads in glove weaving machines.

Glove Defect Identification System

Jan. 2016 - Jun. 2016

Image processing, OpenCV, Python

Identified the common defect of gloves using image processing as they are being passed through a conveyor belt.

Smart Glove

Jan. 2016 - Jun. 2016

Java, JavaFX, FSR 400, Arduino

A glove prototype that can measure the pressure distribution and the acceleration of hand in order to derive the best patterns of movements for Cricket players in relation with the hand pressure.

CERTIFICATIONS

2021 - Advanced Machine Learning on Google Cloud Specialization - Coursera
2021 - Data Engineering, Big Data, and Machine Learning on GCP Specialization - Coursera
2021 - Machine Learning on Google Cloud Specialization - Coursera
2020 - Deep Learning Specialization - Coursera
2020 - Natural Language Processing Specialization - Coursera
2020 - DeepLearning.AI TensorFlow Developer Specialization - Coursera
2020 - Generative Adversarial Networks (GANs) Specialization - Coursera
2020 - Qwicklabs quests on ML and Data Science - Qwicklabs
2015 - Oracle Certified Professional Java SE 6 Programmer - Oracle
2015 - Robotics & Automation - Dreamteam IT Solutions
2015 - Professional Certified Java Developer - Dreamteam IT Solutions
2013 - Diploma in Software Engineering - Esoft
2010 - Diploma in PC Hardware and Network Administration - Esoft

TECHNICAL SKILLS

Computer Languages	Python, Java, C
Numerical Computing	MATLAB, Octave, Numpy
Scientific Computing	Scikit
ML Frameworks	Tensorflow
ML Packages	Darts
Image Processing	OpenCV
Databases	MySQL, MongoDB, Redis
Cloud Platforms	GCP, AWS
Other	Linux, Git, Jupyter Notebook

MENTORING

2021 - Mentor - ReidCon by UCSC
2021 - Mentor at SCoRe Lab - Google Summer of Code 2021
2020 - Mentor at SCoRe Lab - Google Summer of Code 2020
2019 - Mentor at SCoRe Lab - Google Summer of Code 2019
2018 - Mentor at SCoRe Lab - Google Code-In 2018
2018 - Mentor - 2nd Year Group Project Mentoring by IEEE Student Branch of UCSC
2017 - Mentor at SCoRe Lab - Google Code-In 2017
2017 - Question Panel Member - preXtreme 2.0 - IEEE Student Branch of UCSC
2017 - Mentor - International School Software Competition (ISSC) by Computer Society of Sri Lanka
2017 - Mentor - Help to Code by Information and Communication Technology Agency of Sri Lanka
2016 - Mentor at SCoRe Lab - Google Code-In 2016
2016 - Mentor - National School Software Competition (NSSC) by Computer Society of Sri Lanka

COMMITTEE POSITIONS

2021 - Judge panel member - IEEE YESIST12 2021 Junior Einstein Track by IEEE
2021 - Judge panel member (Machine Learning) - MadHack by IEEE Student Branch of UCSC
2019 - Present - Core Team Member - Google Developer Group (GDG) Sri Lanka
2019 - President - IEEE Student Branch of UCSC
- [Award] IEEE Regional Exemplary Student Branch 2020 under Region 10 and Sri Lanka Section
- [Award] Bronze category winner of IEEE Darrel Chong Student Activity Award 2020
- [Award] Best Student Branch Activity Award for GameRush at IEEE SLSYWC 2019
2019 - Team Lead - Mozilla activate Sri Lanka - Rust Team
2018 - Web Master - IEEE Sri Lanka Section - Student activity Committee (SAC)
2018 - Secretary - IEEE Student branch of UCSC
2018 - Operational Committee Member - Mozilla Activate Sri Lanka
2018 - Android Developer - Global Geek Sustainable Learning Kingdom (GGSLK) Sri Lanka
2017 - Operational Committee Member - Program Team - IEEE Student/YP/WIE Congress
2017 - Finance Team Lead - Technological Awareness Project by IEEE Sri Lanka Section
- [Award] Best Industry Collaborative Award at IEEE SLSYWC 2017
2017 - Program Team Lead - CloudHack 17 by IEEE Student Branch of UCSC
- [Award] Best Student Branch Activity Award at IEEE SLSYWC 2017
2017 - Core Team Member - Mozilla Club UCSC
2017 - Coordinator - IEEE Student Branch of UCSC
2016 - Operational Committee Member - Finance Team - Innover (IEEE IAS IOT Workshop)
2016 - Operational Committee Member - Program Team - IEEE Day UCSC
2016 - Instructor - UCSC Exploration Club
2013 - President - Robotics Club - Maliyadeva College
2012, 2013 - Team Lead - Hardware and Networking Team - Maliyadeva College

REFERENCES

Nalin Ranasinghe

Ph.D (Cardiff)

Senior Lecturer at UCSC

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Gihan Seneviratne

M.Phil. (Cardiff)

Senior Lecturer at UCSC

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