



Sandareka Wickramanayake

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PUBLICATIONS

- **Sandareka Wickramanayake**, Wynne Hsu, Mong Li Lee, "Explanation-based Data Augmentation for Image Classification," In NeurIPS, 2021.
- **Sandareka Wickramanayake**, Wynne Hsu, Mong Li Lee, "*Comprehensible Convolutional Neural Networks via Guided Concept Learning*," In IJCNN, 2021.
- **Sandareka Wickramanayake**, Wynne Hsu, Mong Li Lee. "*Towards Fully Interpretable Deep Neural Networks: Are We There Yet?*" In XAI Workshop - ICML, 2021.
- **Sandareka Wickramanayake**, Wynne Hsu, Mong Li Lee, "*FLEX: Faithful Linguistic Explanations for Neural Net based Model Decisions*", In AAAI, 2019.
- **Sandareka Wickramanayake**, H.M.N. Dilum Bandara, "*Poster: Enhancing Fuel Economy of Fleet Vehicles Through Real-Time Driver Monitoring and Feedback*", In MobiSys, 2016.
- **Sandareka Wickramanayake**, H.M.N. Dilum Bandara, "*Fuel Consumption Prediction of Fleet Vehicles Using Machine Learning: A Comparative Study*", In Mercon, 2016.
- Sanka Darshana, Dileepa Fernando, Sadari Jayawardena, **Sandareka Wickramanayake**, Chathura De Silva, "*Efficient PERCLOS and Gaze Measurement Methodologies to Estimate Driver Attention in Real Time*", In ISMS, 2014.
- K.U.G.S. Darshana, M.D.Y. Fernando, S.S. Jayawardena, **S.K.K. Wickramanayake**, "*Riyadisi - Intelligent Driver Monitoring System*", In ICTer, 2013.

CURRENT RESEARCH INTERESTS

Explainable AI, Deep Learning, Machine Learning

EDUCATION

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| Doctor of Philosophy School of Computing, National University of Singapore | 2017 - 2022 |
| Bachelor of the Science of Engineering (Hons) Department of Computer Science and Engineering University of Moratuwa | 2009 – 2014 |

PROFESSIONAL EXPERIENCE

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|---|----------------------|
| Lecturer – University of Moratuwa | Feb 2016 - Present |
| Graduate Teaching Assistance – National University of Singapore | Aug 2017 – Aug 2020 |
| Junior Consultant – University of Moratuwa | July 2015 – Feb 2016 |
| Software Engineer - Mubasher Technologies (Pvt) Ltd | Mar 2014 – July 2015 |
| Trainee Software Engineer - IronOne Technologies (Pvt) Ltd | May 2012 – Dec 2012 |

Awarded of Excellence for outstanding performance

Student Instructor - University of Moratuwa

Jun 2013 – Oct 2013

RESEARCH PROJECTS

- **Human Understandable Deep Neural Networks for Image Recognition** May 2017– Feb 2022

Explaining the decisions of Deep Neural Networks (DNNs) is imperative to safeguard end-user trust. Such explanations must be intuitive, descriptive, and faithfully explain why a model makes its decisions. In this research, we develop methods to generate descriptive and faithful concept-based explanations to rationalize and improve the decisions of DNN based image recognition models.

- **Modeling and Enhancing Fuel Economy of Fleet Vehicles Based on Vehicular Data Analytics** July 2015 – Dec 2016

The main objective of this research is to model and evaluate fuel consumption of fleet vehicles based on vehicular data and big data analytics methodologies, and then to suggest suitable process improvements/engineering actions to improve the fuel economy.

- **Research and Development Project - Riyadisi** Feb 2013 – Nov 2013

Riyadisi – A Real-time non-invasive driver attention assistance system to monitor the driver and alerts when he/she is drowsy or distracted. Riyadisi uses typical visual features of a drowsy person; decreased eye blinking rate, yawning and nodding off, to detect drowsiness whereas eye-gaze movement and head movement are used in distraction detection. These features are derived using computer vision and machine learning techniques. All the captured features are fed to a time series analysis model which uses a 'Neuro fuzzy' approach to decide on the drowsiness level and the corresponding action.

PROFESSIONAL SERVICES

Reviewer - Transactions on Pattern Analysis and Machine Intelligence (TPAMI), Tsinghua Science and Technology, Transactions on Systems, Man and Cybernetics, WiML Workshop - NeurIPS 2019

Poster Mentor – WiML Workshop - NeurIPS 2020

ACHIEVEMENTS

- **Awardee** of Research Achievement Award, School of Computing, National University of Singapore, 2020
- **Scholarship winner** to attend the 14th ACM International Conference on Mobile Systems, Applications, and Services Singapore, 2016
- **Scholarship winner** to present a poster based on the final year project, Riyadisi, in Grace Hopper Celebration in Women in Computing Conference, India 2014 Organized by Anita Borg Institute for Women and Technology
- **Scholarship winner** to attend Grace Hopper Celebration in Women in Computing Conference, India 2013 Organized by Anita Borg Institute for Women and Technology
- **MIND Scholarship Holder**
Munasighe Institute for Development is an organization formed by Professor Munasighe, a Noble prize holder to promote the concept of sustainable development. MIND scholarship is awarded to final year undergraduates considering their academic performance and extra-curricular activities.
- **Semifinalist** - Inter University Speech Contest 2011 organized by the Gavel Club, University of Kelaniya

- **Semifinalist** - Intra University Speech Contest 2011 and 2010 organized by Gavel Club, University of Moratuwa

LEADERSHIP SKILLS

University Level (As a Lecturer):

- **Organizing committee member** – International Symposium on Applied Analytics for a Smart Society – Colombo, Sri Lanka – (31st August 2016 – 1st September 2016)
This was organized by the Faculty of Graduate Studies, the University of Moratuwa in partnership with the School of Information Systems, Singapore Management University.
- **Organizing committee member** – Business Analytics Techniques Workshop organized by University of Moratuwa – (6th September 2016 – 7th September 2016)
- **Secretary** (2016 - Present) – Toastmasters Club, University of Moratuwa

University Level (As an Undergraduate):

- **Secretary** (2012 – 2013), **Assistance Secretary** (2011 – 2012), **Project Co-chair** (Orientation Program 2011) – **Gavel Club**, University of Moratuwa
Gavel Club is an affiliate of Toastmasters International in whose main expectation is to enhance the communication skills and leadership skills of the members.
- **Batch Representative** (2011– 2012) - 2009 Batch, Department of Computer Science and Engineering, University of Moratuwa
- **Organizing committee member** – IPv6 Day – Sri Lanka (April 2011– June 2011)
An event organized by the Department of Computer Science and Engineering, the University of Moratuwa in collaboration with IESL (Institute of Engineers Sri Lanka) and TechCERT, parallel to the World IPv6 Day Organized by Internet Society with the intention of assessing the IPv6 readiness in Sri Lanka.

EXTRA-CRICULAR ACTIVITIES

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|---|-----------------------|
| • Mentor in Google Code In 2014 for FOSSASIA | Nov 2014 – Jan 2015 |
| • Article Writer - MoraSpirit | Jan 2013 – Nov 2013 |
| • Co-editor - CSE News Magazine | March 2013 – Dec 2013 |

PROFESSIONAL MEMBERSHIP

- **Associate Member (AM-18141)** – Institute of Engineers Sri Lanka
- **Member (5005388)** – Toastmasters International