

Lahiru Wijayasingha

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[Google Scholar](#)

Computer vision and multimodal deep learning, with a focus on monocular depth estimation, camera-independent 3D perception, and egocentric/wearable sensing. Broader interests include applying vision and multimodal ML to healthcare, human activity recognition, and assistive systems.

Education

University of Virginia: PhD in Computer Science	2017-2024
Imperial College London: MS Medical robotics and Image guided intervention	2015-2016
University of Moratuwa, Sri Lanka: BSC in Mechanical Engineering	2009-2014

Publications

First Author

Wijayasingha L., Alemzadeh H., Stankovic J. (2024) Camera-Independent Single Image Depth Estimation from Defocus Blur, WACV

Wijayasingha L., Stankovic J. (2022) Generalized Few-Shot Learning for Wearable Sensor-based Human Activity Recognition, IEEE PerCom Workshops

Wijayasingha L., Stankovic J. (2021) Robustness to noise for speech emotion classification using CNNs and attention mechanisms, Smart Health

Wijayasingha L., Lo B. (2016) A wearable sensing framework for improving personal and oral hygiene for people with developmental disabilities, IEEE Wireless Health

Selected Co-Authored

2026 - Egoems: A high-fidelity multimodal egocentric dataset for cognitive assistance in emergency medical services, Proceedings of the AAAI Conference on Artificial Intelligence

2024 - EgoCap and EgoFormer: First-person image captioning with context fusion, Pattern Recognition Letters

Under review

Wijayasingha L. (2026) Sufficient Frame Subsets for Video Understanding, under review for WACV 2027

Experience

Independent Researcher

January 2026-September 2026

Developing an explainable AI method for video classification models based on sufficient input subsets, isolating minimal input frames that drive a model's decision (manuscript under review, WACV 2027)

University of Iowa, USA: Research Scholar

June 2024 - November 2025

- Labelled a dataset, built a spatio-temporal **multimodal deep learning** framework for echocardiogram classification, integrating clinical data with video sequences to improve detection of Takotsubo cardiomyopathy.
- Working with SGE-based **high-performance cluster** computing system for scheduling GPU-heavy training scripts using **CUDA** and **PyTorch**.

University of Virginia, USA: PhD May 2024

August 2017-

- Developed a novel **single-image depth estimation** method exploiting defocus blur, generalizing across camera settings and outperforming prior state-of-the-art on cross-camera evaluation.
- Designed CNN-based techniques for **noise-robust audio emotion recognition**, validated across multiple public benchmark datasets.
- Formulated a few-shot learning method for **wearable-sensor human activity recognition**, outperforming existing approaches on three public datasets.
- Co-designed and deployed an in-home care system for Alzheimer's patients and caregivers; built the **AWS-based real-time data pipeline** and a Slack-based alerting system for the care team
- Led design and **data collection** for a **multi-modal** (video, IMU, audio) CPR performance dataset across 23 participants.
- Working with **Slurm-based high-performance cluster** computing system for job scheduling related to model training. And using **CUDA**, **PyTorch**, **Keras**, **OpenCV**, **MATLAB** among others.

Elder Research, USA: Machine Learning Intern

August 2021 - December 2021

- Collaborated with data science engineers to explore **neural differential equation** solving using **Julia** for modeling space object dynamics. Programmed **C** libraries to extract data from **NASA's SPICE toolkit** for machine learning model training.
- Developed and validated a neural differential equation solver for space object positioning. Effectively communicated research outcomes to the team.

Imperial College London: Research-based MS Student

September 2015 - October 2016

- Constructed **Naïve Bayes** classifiers for real-time hand motion classification using smartwatch data and developed corresponding **Android apps**. Led an experimental study with seven participants to gather data on teeth brushing and hand-washing behaviors.

CodeGen Sri Lanka: Data Science Engineer

January 2017 - September 2017

- Developed a two-tiered **image classification** system for customer preference analysis. Created a Naïve Bayes classifier with over 90% accuracy in cartoon image filtering and trained a **CNN** model using **Caffe** for classifying pre-filtered images.
- Developed and optimized machine learning models for customer demand prediction, leveraging historical data and weather patterns. Evaluated **LSTM**, **random forest**, and **XGBoost** models, selecting LSTM for its superior performance. Presented findings to the engineering team, aiding decision-making.
- Explored **ALS** technique for improving our recommendation system. Developed a prototype leveraging ALS for personalized suggestions, proving its real-world applicability.

Awards and Scholarships

- University of Virginia Computer Science Fellowship August 2017
- Imperial College London Faculty of Medicine Dean's Prize awarded to the top student of the program September 2016

Teaching Experience

University of Virginia: Teaching Assistant
2023

August 2017 - May

- Spring 2023: Wireless for the Internet of Things. Conducted Labs and office hours on different IoT wireless protocols including BLE, IEEE 802.15.4, Wi-Fi, Cellular, LoRa
- Fall 2018 and Spring 2019: Computer Architecture. Conducted labs and office hours on subjects including Assembly, C, Bitwise operations, Pipelining, Caches, Optimization and Virtual memory.
- Fall 2018: Internet of Trillion of Things. Helped with grading assignments.

University of Moratuwa Sri Lanka: Temporary Lecturer

April 2015 - August 2015

Conducted sections of a module on mechanical properties of materials.

Academic Service

Peer Review:

- IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2027: 2 articles
- Neural Information Processing Systems, 2027: 3 articles
- IEEE Signal Processing Letters, 2024: 1 article
- International Conference on Pattern Recognition, 2024: 4 articles
- Nature Scientific reports, 2024: 1 article
- Science direct Smart Health journal, 2021: 1 article

Leadership services

University of Virginia Link Lab: The Student Committee

May 2020 - August 2022

- Served as the president of the committee and led a team of graduate students in organizing social events, hikes, and sports activities within the collaborative space of approximately 200 grad students. Recognized with the Outstanding Graduate Student Service Award at the Link Lab.
- Collaborated closely with a fellow graduate student and the Link Lab staff to transform the student committee. Successfully expanded the committee from a mere two members to a robust team of eight. Actively recruited new members, ensuring diverse perspectives and skill sets.

University of Virginia hospital: Volunteering at the gift shop

April 2018 - August 2019

Certifications

- Machine Learning in Production (DeepLearning.AI, taught by Andrew Ng), 2026
- Retrieval Augmented Generation (RAG), DeepLearning.AI (Andrew Ng) · Oct 2026