Nishankar Sathiyamohan

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Education

University of Peradeniya Kandy, Sri Lanka
B.Sc (Hons) in Computer Engineering, CGPA: 3.50/4.00 *Nov 2018 – Dec 2023*

Hartley College Point Pedro, Sri Lanka
GCE Advanced Level - Physical Sciences *Jan 2009 – Aug 2017*

- Results: Combined Mathematics (A), Chemistry (A), Physics (B)

Publications

ViT-RoT: Vision Transformer-Based Robust Framework for Tomato Leaf Disease Recognition |
AgriEngineering Jan 2025 – Jun 2025

- Analyzed various Vision Transformer architectures to build a robust disease recognition model. This research is crucial for food security, as it enables automated, early detection of plant diseases.
- Reference: S. Nishankar, V. Pavindran, et al., "ViT-RoT: ...," AgriEngineering, vol. 7, p. 185, 2025. DOI:10.3390/agriengineering7060185

TOM-SSL: Tomato Disease Recognition using Pseudo-labelling based Semi-supervised Learning |
AgriEngineering Jun 2025 – Jul 2025

- Proposed a semi-supervised learning framework using pseudo-labelling to effectively classify tomato leaf diseases, reducing the dependence on large annotated datasets.
- Reference: S. Nishankar, T. Mithuran, et al., "TOM-SSL: ...," *AgriEngineering*, vol. 7, p. 248, 2025. DOI:10.3390/agriengineering7080248

U-FedTomAtt: Ultra-lightweight Federated Learning with Attention |
Journal (Under Review) Aug 2025 – Present

- Proposed an ultra-lightweight Federated Learning framework with an attention mechanism for tomato disease recognition, enabling privacy-preserving collaboration among farmers with low-resource devices.

Deep Semi-supervised Learning for Medical Image Analysis: A Survey |
Computer Science Review (Under Review) Jan 2025 – Jun 2025

- This work surveys methods that learn from limited labeled data, which is critical in the medical field where expert annotation is a major bottleneck.

Self-xViT: Self-supervised Vision Transformer for Explainable Tomato Leaf Disease Detection |
Computers and Electronics in Agriculture (Submitted) Mar 2025 – Aug 2025

- Developed a novel self-supervised Vision Transformer training framework with a localized attention mechanism to provide visual explanations for predictions.

Research Experience

Autoencoder-Based Anomaly Detection for Enhancing URLLC in Urban 5G Networks |
Journal (Draft) Sep 2025 – Present

- Investigating autoencoder-based architectures to detect anomalies in 5G networks specifically for autonomous vehicle communication, ensuring Ultra-Reliable Low Latency Communication (URLLC).

Hybrid Quantum-Classical Anomaly Detection: A Feasibility Study for URLLC |
Journal (Experimental) July 2025 – Present

- Exploring the potential of hybrid quantum-classical neural networks to enhance anomaly detection performance in autonomous vehicle networks.

Deep Skin Cancer Diagnosis with Limited Annotations |
Journal (Draft) Aug 2025 – Present

- Conducting a comprehensive review of deep learning techniques for skin cancer diagnosis, focusing on challenges posed by limited annotated data.

BACL: Boundary-Recognized Compositional Learning for Skin cancer segmentation |
Journal (Experimental) Aug 2025 – Present

- Developing a novel compositional learning framework that explicitly recognizes lesion boundaries to improve the accuracy and robustness of skin cancer segmentation models.

Professional Experience

Lecturer (Probationary) Apr 2025 – Present
Sabaragamuwa University of Sri Lanka *Dept. of Software Engineering*

- Teaching undergraduate courses and supervising final year research projects.
- **University Business Linkage (UBL) Coordinator**: Facilitating collaboration between the university and industry partners.
- **Assistant Research Coordinator**: Managing departmental research activities and student publications.

Lecturer (Contract) Apr 2024 – Apr 2025
University of Jaffna *Dept. of Computer Engineering*

Instructor Jan 2024 – Apr 2024
University of Peradeniya *Dept. of Computer Engineering*

Freelance Software Developer 2022 – Present
Remote (Self-Employed)

- Developed DUCAS AI to automate daily reporting in construction projects using Azure, GPT-4o, FastAPI, and MongoDB.

Software Engineering Intern Dec 2022 – Apr 2023
Infinity Innovators Pvt *Colombo, Sri Lanka*

- Developed WAKA, a full-stack online vehicle marketplace for New Zealand using React.js, Node.js, and AWS Serverless architecture.

Teaching Experience

University of Jaffna – *Lecturer on Contract* 2024 – 2025

- Taught courses: **Embedded Systems**, **Computing**, **Digital Image Processing**, **Applied Algorithms**, and **Digital Design**.

University of Peradeniya – *Instructor* 2024

- Led instruction for: **Artificial Intelligence**, **Computer Communication Networks** and **Advanced Database Management Systems**.

Projects

Efficient Transfer Learning and XAI for Computational Histopathology 2023

- Demonstrated that multi-stage transfer learning improves model performance on limited histopathology datasets.
- Utilized XAI methods (SHAP, LIME, GradCAM) to enhance model trust and interpretability.
- **Tech Stack:** Tensorflow, Keras, Flask, OpenCV

Road Sign Detection in Low Light Conditions 2023

- Developed an AI system using YOLOv8 to detect and recognize road signs in low-light conditions, deploying it as a web application using Flask on AWS.
- **Tech Stack:** YOLOv8, Flask, OpenCV, PyTorch, AWS

Academic Service & Memberships

Editor ICSUSL International Conference (2025)

Publication Chair ComURS Symposium, Sabaragamuwa University (2025)

Publication Chair ICARC Conference, Sabaragamuwa University (2025)

Co-Chair (Open Track) ICARC Conference (2025)

Registration Chair ICARC Conference (2025)

Reviewer ICARC Conference (2025)

Member Institute of Electrical and Electronics Engineers (IEEE)

Member Institution of Engineers, Sri Lanka (IESL)

Honors & Awards

Gold Medal: Best Young Researcher Award Sabaragamuwa University of Sri Lanka (2025)

Best Researcher Award (Faculty Level) Faculty of Computing, Sabaragamuwa University (2025)

1st Place: Pre Aces Hackathon, Inter-University Coding Competition 2022

8th Place: Aces Hackathon, Nationwide Coding Competition 2022

Semi-finalist: Deep Speed, Line Following Robot Competition 2019

Technical Skills

Programming: Python, Node.js, Express.js, Django, Flask, FastAPI, Java, C++, SQL
AI/ML: PyTorch, TensorFlow, Keras, OpenCV, Scikit-learn, YOLOv8, Vision Transformer
Web & Database: React.js, Flutter, HTML/CSS, MongoDB, MySQL
Cloud & DevOps: AWS (Serverless, EC2, S3), Azure, Docker, Git

Statement of Purpose

My genuine growth as a researcher began after I joined Sabaragamuwa University as a lecturer. While I currently have a modest number of publications, I have immersed myself in a wide range of active research—from medical imaging and 3D reconstruction to networking and anomaly detection—collaborating with professionals worldwide. This diverse exposure has given me the confidence that, with dedication, I can master complex new domains.
I strongly believe that Quantum Computing is the technology that will shape the future of AI. I am eager to pursue this PhD to bridge my current knowledge with the expertise of leaders like Dr. Anil Prabhakar, Dr. Ria Rushin Joseph, and Dr. Sutharshan Rajasegarar. I look forward to the opportunity to learn from their deep knowledge in Quantum Machine Learning and, as a self-motivated researcher, I am committed to working hard to contribute to the field of Hybrid Quantum–Classical frameworks.