Yasiru Ranasinghe

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Education

Aug 2022 – Present

Johns Hopkins University
Ph.D. in Electrical and Computer Engineering
Expected graduation date **February/2026**

- Fourth-year Ph.D. student at the Vision & Image Understanding (VIU) Lab, Johns Hopkins University, advised by Prof. Vishal M. Patel
- Research focuses on scene understanding, object detection, self-supervised learning, and foundation models for agent-based AI
- Interested in developing generalizable vision systems that integrate foundation models for robust perception across diverse tasks and environments

Nov 2015 – Jul 2020

University of Peradeniya
B.Sc in Electrical and Electronic Engineering

- Graduated with First Class Honors (GPA: 4.00/4.00)
- Thesis topic: "Hyperspectral imaging for remote sensing and agricultural applications", advised by Prof. Roshan Godaliyadda, Prof. Parakrama Ekanayake, and Prof. Vijitha Herath.

Research Experience

Aug 2022 – Present

Vision and Image Understanding Lab, Johns Hopkins University
Graduate Research Assistant

- Conducting research in the Department of Electrical and Computer Engineering under the supervision of Prof. Vishal M. Patel.
- Focused on scene understanding, object detection, self-supervised learning, and leveraging foundation models for agent-based AI.
- Developing generalizable vision systems that integrate foundation models to enhance perception across diverse environments.

Apr 2021 – Jul 2022

University of Peradeniya, Peradeniya, Sri Lanka
Research Assistant

- *Project*: Artificial Intelligence to Detect and Contain COVID-19 and Future Epidemics in Sri Lanka and Malaysia
- *Contribution*: (1) Proposed a method to analyze COVID severity measures with different demographic parameters. (2) Developed an emulator engine to assess the disease spread based on mobility patterns. (3) Conducted an island-wide survey to collect data to assess the impact on health, economy, mobility pattern, education, and lifestyle of individuals from diverse groups.
- *Outcome*: We published our findings in MDPI Sustainability.

Publications

- *CrowdDiff*: Multi-hypothesis Crowd Density Estimation using Diffusion Models, **Yasiru Ranasinghe**, *Nithin Gopalakrishnan Nair, Wele Gedara Chaminda Bandara, and Vishal M. Patel*, CVPR, 2024

- *MonoDiff*: Monocular 3D Object Detection and Pose Estimation with Diffusion Models, **Yasiru Ranasinghe**, *Deepti Hegde, and Vishal M. Patel*, CVPR, 2024

- Foundation Model Synergy for Annotator-Free Object Detection, **Yasiru Ranasinghe**, *Celso De Melo, and Vishal M. Patel, Under Review*

- SINR: Sparsity Driven Compressed Implicit Neural Representations, *Dhananjaya Jayasundara, Sudarshan Rajagopalan,* **Yasiru Ranasinghe**, *Trac D. Tran, and Vishal M. Patel*, CVPR, 2025

- Retrieval-based Zero-shot Crowd Counting, **Yasiru Ranasinghe** *and Vishal M. Patel, Under Review*

- Crowd Detection via Point Localization with Diffusion Models, **Yasiru Ranasinghe** *and Vishal M. Patel*, IEEE FG, 2024

- Zero-shot Scene Understanding for Automatic Target Recognition using Large Vision-Language Models, **Yasiru Ranasinghe**, *Vibashan VS, James Uplinger, Celso De Melo, and Vishal M. Patel*, AVSS, 2025

- Transmittance Multispectral Imaging for Reheated Coconut Oil Differentiation, **Yasiru Ranasinghe**, *HK Weerasooriya, S Herath, MP Bandara Ekanayake, HMVR Herath, GMRI Godaliyadda, and Terrence Madhujith*, IEEE Access, 2022

- Constrained Nonnegative Matrix Factorization for Blind Hyperspectral Unmixing Incorporating Endmember Independence, *EMMB Ekanayake, HMHK Weerasooriya,* **Yasiru Ranasinghe** *, S Herath, B Rathnayake, GMRI Godaliyadda, MPB Ekanayake, and HMVR Herath*, IEEE JSTARS, 2021

Awards and Honors

- **C.A. Hewavitharana Memorial Prize**, University of Peradeniya, 2020

  This prize is awarded to the best student in all fields of engineering in the faculty (Civil, Chemical and Process, Computer, Electrical and Electronic, Manufacturing and Industrial, and Mechanical), according to the overall performance.

- **Ceylon Electricity Board Gold Medal**, University of Peradeniya, 2020

  This gold medal is awarded to the best student in the field of Electrical and Electronic Engineering, according to the overall performance in the Electrical and Electronic Engineering degree course.

- **Ceylon Electricity Board Prize**, University of Peradeniya, 2020

  This prize is awarded to the best student in the field of Electrical and Electronic Engineering, according to the overall performance in the Electrical and Electronic Engineering degree course

- **W.P. Jayasekara Prize**, University of Peradeniya, 2020

  This prize is awarded to the best undergraduate final-year project in the Department of Electrical and Electronic Engineering.

- **Prof. E.F. Bartholameusz Endowment Award**, University of Peradeniya, 2020

  This prize is awarded to the best final-year undergraduate project with an outstanding mathematical background from the project groups nominated by each of the departments (Civil, Chemical and Process, Computer, Electrical and Electronic, Manufacturing and Industrial, and Mechanical.)

- **W.M.G. Fernando Prize**, University of Peradeniya, 2020

  This prize is awarded to the best student for the performance in the courses offered under the Electronic Communication specialization (Signals and Systems, Communication Systems, and Communication Theory.)

- **R.H. Paul Prize**, University of Peradeniya, 2020

  This prize is awarded to the best student for the performance in the courses offered under the Electronic Power and Energy specialization (Electric Power, Power and Energy, Electrical Machines. Power Engineering, and Electrical Power Systems.)

References

Vishal M. Patel
Associate Professor of Electrical and Computer Engineering,
Johns Hopkins University.
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