

MAGALLE HEWA VINOJ YASANGA JAYASUNDARA

B.Sc. Engineering (Moratuwa), BIT(Moratuwa), LL.B.(London)

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📖 Google Scholar 🔗 LinkedIn 🐙 GitHub

Research Interests: Action Recognition and Forecasting, Object Detection and Recognition, Image and Video Segmentation, Scene Understanding, Deep Generative Models, Adversarial Attacks and Defenses, Vision and Language, Stereo Vision, Capsule Networks, Model Optimization, Few and Zero-Shot Learning, Transfer Learning, Meta Learning, Active Learning, Geometric Modeling, Computer Vision, Machine Learning, Artificial Intelligence.

EDUCATION

- ❖ **B.Sc. Honors in Engineering (First Class Honors)** 2014 - 2018
Department of Electronic and Telecommunication Engineering, University of Moratuwa.
GPA: 3.99/4.20 | Ranked 1st/3000+ in the first semester of undergraduate study among all state universities in SL.
TOEFL: 117/120 (*Read: 30 List: 30 Speak: 28 Writ: 29*)
- ❖ **Bachelor of Information Technology (First Class Honors)** 2011 – 2017*
Faculty of Information Technology, University of Moratuwa, Sri Lanka.
*Diploma (Feb 2011 - Dec 2011), Higher Diploma (July 2013 - Aug 2015), Degree (Sep 2015 - June 2017)
- ❖ **Bachelor of Laws (Second Class Honors)** 2012 - 2016
University of London, United Kingdom.

PUBLICATIONS

Google Scholar Profile (Citations: 17 h-index: 3 as of Nov 2019)

CONFERENCE PAPERS

- ❖ **Jayasundara, V.**, Bui, N., Jiang, L. and Lo, D., TreeCaps: Tree-Structured Capsule Networks for Program Source Code Processing. *Advances in Neural Information Processing Systems, ML for Systems Workshop (NeurIPS Workshops)*, 2019. [Paper, Presentation, Code]
- ❖ **Jayasundara, V.**, Jayasekara, S., Jayasekara, H., Rajasegaran, J., Seneviratne, S. and Rodrigo, R., TextCaps: Handwritten Character Recognition with Very Small Datasets. *Winter Conference on Applications of Computer Vision (WACV)*, 2019. (*Oral*). [Paper, Presentation, Poster, Code]
- ❖ Rajasegaran, J., **Jayasundara, V.**, Jayasekara, S., Jayasekara, H., Seneviratne, S. and Rodrigo, R., DeepCaps: Going Deeper with Capsule Networks. *Proceedings of the IEEE conference on computer vision and pattern recognition (CVPR)*, 2019. (*Oral*). [Paper, Presentation, Poster, Code]
- ❖ Jayasekara, H., **Jayasundara, V.**, Jayasekara, S., Rajasegaran, J., Seneviratne, S. and Rodrigo, R., TimeCaps: Learning from Time Series Data with Capsule Networks. *International Conference on Agents and Artificial Intelligence (ICAART)*, 2020. (*Oral*). [Paper]
- ❖ Gao, Z., **Jayasundara, V.**, Jiang, L., Xia, X., Lo, D. and Grundy, J., SmartEmbed: A Tool for Clone and Bug Detection in Smart Contracts through Structural Code Embedding. *IEEE International Conference on Software Maintenance and Evolution (ICSME)*, 2019. CORE Rank: A [Paper, Code]
- ❖ Ramasinghe, S., Rajasegaran, J., **Jayasundara, V.**, Ranasinghe, K., Rodrigo, R. and Pasqual, A., Micro Actions and Deep Static Features for Activity Recognition. *IEEE Digital Image Computing: Techniques and Applications (DICTA)*, 2017. (*Oral*). CORE Rank: B [Paper, Presentation, Poster]

JOURNAL ARTICLES

- ❖ **Jayasundara, V.**, Jayasekara, H. and Samarasekara, T., Device-Free User Authentication, Activity Classification and Tracking using Passive Wi-Fi Sensing: A Deep Learning Based Approach. *IEEE Sensors Journal (Sensors)*, 2019. Impact Factor: 3.076 [Paper]
- ❖ Ramasinghe, S., Rajasegaran, J., **Jayasundara, V.**, Ranasinghe, K., Rodrigo, R. and Pasqual, A.A., Combined Static and Motion Features for Deep-Networks Based Activity Recognition in Videos. *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2017. Impact Factor: 4.046 [Paper]

RESEARCH AND PROFESSIONAL EXPERIENCE

[LinkedIn Profile](#)

- ❖ **Research Engineer (Full time)** Oct 2019 - To date
Artificial Intelligence Initiative, Agency for Science, Technology and Research (A*STAR), Singapore.
Research interests: Learning to anticipate human actions that happen in the next one to five seconds using self-regularized future content generation (Submission due for ECCV'20)
- ❖ **Research Engineer (Full time)** Feb 2019 - Sep 2019
School of Information Systems, Singapore Management University, Singapore.
Research interests: Tree-structured convolutional and capsule networks for code analysis and related natural language processing tasks
- ❖ **Senior Software Engineer/Project Lead (Part time remote)** Sep 2018 - To date
Reservoir Rock Technologies, Perth, Australia.
Research interests: Object detection, recognition and scene understanding for self-driving vehicles and underground imaging, Participated in the KiTS19 Challenge of MICCAI'19, working on kidney tumor detection using attention based U-Nets.
- ❖ **Software Engineer (Part time)** Jan 2018 - Dec 2018
Soft Vision Technologies (Pvt) Ltd, Colombo, Sri Lanka.
- ❖ **Research Assistant (Full time)** Jul 2017 - Dec 2017
LiveLabs Urban Lifestyle Innovation Lab, Singapore Management University, Singapore.
- ❖ **Research Assistant (Part time)** May 2016 - Jul 2017
A&T Labs (Pvt) Ltd, Colombo, Sri Lanka.

PRESENTATIONS AND INVITED TALKS

- ❖ **Poster: Tree-Structured Capsule Networks for Program Source Code Processing** Scheduled
Thirty-third Conference on Neural Information Processing Systems (NeurIPS), Vancouver, Canada.
- ❖ **Oral & poster: Going Deeper with Capsule Networks** Jun 2019
IEEE conference on Computer Vision and Pattern Recognition (CVPR), Long Beach, USA.
- ❖ **Oral & poster: Handwritten Character Recognition with Very Small Datasets** Jan 2019
IEEE Winter Conference on Applications of Computer Vision (WACV), Hawaii, USA.
- ❖ **Oral & poster: Micro Actions and Deep Static Features for Activity Recognition** Dec 2017
Intl. Conference on Digital Image Computing: Techniques and Applications (DICTA), Sydney, Australia.
- ❖ **Poster: Remotely Controllable Video/Audio Surveillance Robots** Oct 2017
IEEE Energy Conversion Congress & Expo and Industrial Applications Society AGM 2017, Cincinnati, USA.
- ❖ **Invited Talk: Artificial Intelligence in Robotics Systems** Apr 2017
Arduino Day Sri Lanka 2017, University of Moratuwa, Sri Lanka.

PROFESSIONAL SERVICE AND TEACHING EXPERIENCE

- ❖ Served as a reviewer in IEEE R10HTC'18, IEEE MERCON'19 and IEEE TIE journal (IF - 7.503).
- ❖ Currently contributing as a co-organizer on a proposal for a Capsule Networks workshop in ICML 2020, in collaboration with researchers from Vienna University of Technology.
- ❖ Initiated a conference travel fund with my own finances to support underprivileged students working on computer vision and machine learning in the University of Moratuwa.
- ❖ Conducted supporting tutorials for students in multiple modules including image processing and machine vision.
- ❖ Mentored undergraduate students and interns:
 - Kalana Abeywardena, Shechem Sumanthiran: Capsule Networks (2018)
 - Uvindu Perera: Open Set Recognition (2019) ◦ I will be supervising two interns at A*STAR from Jan 2020

SKILLS

Github Page

- ❖ Excellent programming skills:
 - Fluent in Python, Java
 - Intermediate in C++
 - Deep learning frameworks: TensorFlow, Keras, PyTorch
 - Machine learning frameworks: MATLAB, R
 - Web development: Flask, PHP, HTML, CSS, JavaScript
 - Database: MySQL, PostgreSQL, SQLite
 - Other: Android Studio, GNURadio, Arduino, MikroC
- ❖ Strong independent research skills, technical and creative writing skills, communication skills, interpersonal skills, leadership skills and the ability to deliver under a tight schedule.

SCHOLARSHIPS

- ❖ **Sujatha Guruge Scholarship** **2016**
For the best performance in the first semester of undergraduate study among all state universities, awarded by the Public Trustee Department, Sri Lanka.
- ❖ **Full student scholarship and Mahapola Scholarship** **2014**
To study for the BSc. Eng., University of Moratuwa, awarded by the government of Sri Lanka.
- ❖ **Dr. G.C.L. de Silva Memorial scholarship** **2013**
For obtaining distinctions in all subjects at GCE A/L and O/L exams, awarded by Royal College, Sri Lanka.
- ❖ **Full student scholarship** **2012**
To study for the LL.B., University of London, awarded by the Centre for Professional Studies, Sri Lanka.
- ❖ **Rupasinghe Memorial Scholarship** **2011**
For the best performance at GCE O/L examination, awarded by Royal College, Sri Lanka.

SELECTED ACHIEVEMENTS, AWARDS AND PROFESSIONAL AFFILIATIONS

- ❖ **First runner-up : International Robotics Demonstration Contest** **2017**
Organized by the IEEE Industry Applications Society, held in Cincinnati, USA.
- ❖ **First runner-up : International Robotics Challenge** **2016**
Organized by the Indian Institute of Technology (IIT), Bombay, India.
- ❖ **Alan Turing award for Mathematics** **2012**
Turing Day 2012 organized by the Sri Lanka Institute of Information Technology (SLIIT), Sri Lanka.
- ❖ **Represented Sri Lanka**
 - IGNOU-UNESCO Science Olympiad 2010, obtaining an overall score of 91.8. **2010**
 - International Mathematics and Science Olympiad 2005 held in Jakarta, Indonesia. **2005**
- ❖ **Member** of the Australian Pattern Recognition Society, IEEE and ACM SIGKDD Singapore chapter.