Kanchana Ranasinghe

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Education

Stony Brook University, NY, USA — Aug 2021 - Present
PhD in Computer Science

University of Moratuwa, Sri Lanka — Dec 2015 - Jan 2020
BSc in Engineering; GPA: 3.95/4.20; Awarded Most Outstanding Graduand of the Year

Experience

MBZUAI, Abu Dhabi, UAE - *Research Assistant* — Nov 2020 - Aug 2021

- Self-supervised video representation learning: multi-modal data, contrastive methods
- Interpretability and robustness of vision transformers (Neurips '21)
- Generative modelling for multi-modal output spaces (ICLR '21)
- Adversarial attacks and their transferability

VeracityAI, Colombo, Sri Lanka

Machine Learning Engineer — Feb 2020 - Oct 2020

- Leading team of three associate data scientists
- Vehicle damage detection system: efficient mobile models, generalization
- Active learning for optimal data annotation
- Unsupervised clustering and distance metric computation

Associate Data Scientist — Jan 2019 - Jan 2020

- Instance segmentation for vehicle damage estimation

FiveAI, Cambridge, UK - *Research Intern* — June 2018 - Dec 2018

- Perception team of self-driving startup
- 3D orientation estimation: handling occluded / truncated objects in video feeds
- Generalizing to real-world from synthetic data
- Verification and interpretability of deployed neural network systems

University of Moratuwa, Sri Lanka - *Undergraduate Researcher* — July 2016 - Aug 2017

- Action recognition in videos: multi-modal data, feature fusion (TCSVT '19)
- Temporal modelling of features: recurrent neural networks

Selected Publications

Self-supervised Video Transformers — (under review)
K Ranasinghe, M Naseer, S Khan, F Khan, M Ryoo

On Improving Adversarial Transferability of Vision Transformers — (under review)
M Naseer*, **K Ranasinghe***, S Khan, F Khan, F Porikli

Intriguing Properties of Vision Transformers — NeurIPS, 2021 (spotlight)
M Naseer, **K Ranasinghe**, S Khan, M Hayat, F Khan, M Yang

Orthogonal Projection Loss — ICCV, 2021
K Ranasinghe, M Naseer, M Hayat, S Khan, F Khan

Conditional Generative Modeling via Learning the Latent Space — ICLR, 2021
S. Ramasinghe, **K Ranasinghe**, Salman Khan, Nick Barnes, and Stephen Gould

Bipartite Conditional Random Fields for Panoptic Segmentation — BMVC, 2020 (oral)
S. Jayasumana, **K Ranasinghe**, M. Jayawardhana, S. Liyanaarachchi and H. Ranasinghe

Combined Static & Motion Features for Deep-Networks Based Activity Recognition in Videos
IEEE Transactions on Circuits and Systems for Video Technology, vol. 29, no. 9, pp. 2693-2707, Sept. 2019.
S. Ramasinghe, J. Rajasegaran, V. Jayasundara, **K Ranasinghe**, R. Rodrigo and A. A. Pasqual,

Additional Research Projects

Self Supervised Learning Mar 2020 - Oct 2020

- Research on state-of-the-art conditional generative modeling approaches, their performance in multi-modal spaces, and leveraging generative models for self-supervised learning
- Experimentation with a range of state-of-the-art generative adversarial networks (GANs) on standard image datasets and evaluating performance in terms of accuracy, speed, and computational overhead

Object Tracking and Segmentation Jan 2019 - Jan 2020

- Research on combining Siamese Trackers and recurrent neural networks (LSTM) to simultaneously exploit appearance and spatial information for multi-object tracking, developing unique approach for occlusion aware object tracking, and analyzing effectiveness of BEV space projections for spatial tracking
- Research on panoptic segmentation using conditional random fields, development of novel information fusion layer achieving state-of-the-art performance

Plant Disease Detection June 2017 - June 2018

- Developing of plant-leaf based disease detection system from multi-spectral image feeds (NIR/RGB spectra) and implementing transfer learning based training of CNNs on small datasets of domain-specific images
- Project deployed using mobile app with edge inference and recognized as a Top Initiative at National Tech Awards

Selected Awards

Most Outstanding Graduand of the Year - University of Moratuwa, Sri Lanka 2020

Mahapola Merit Scholarship - Ranked 13th in Sri Lanka at GCE Advanced Level Examination 2014

Participation/ Ranked 296th in world - International Mathematical Olympiad (IMO), Columbia 2013

Bronze Medalist - International Mathematics Competition, South Korea 2010

International Representation / National Champion - IGNOU UNESCO Science Olympiad, India 2011

Professional Activities

British Machine Vision Conference - Peer Reviewer 2020, 2021

IEEE Transactions on Circuits and Systems for Video Technology - Peer Reviewer 2017, 2018

Skills

Languages: Python (proficient), MATLAB, C++ (novice) **Frameworks**: Tensorflow, PyTorch
Experience & Interests: Computer Vision, Machine Learning, Deep Learning

Hackathon Experience

Finalists - Presidential Hackathon organized by the Government of Taiwan Taiwan, 2019

Asia-Pacific Runners-Up - Innovate FPGA organized by Intel and Terasic International, 2018

Champions & Best Data Scientist - Datathon organized by Axiata Colombo, 2019

Champions - CodeSprint 3.0 organized by IdeaMart & IIT Colombo, 2018

Volunteer Experience / Leadership

Captain - University of Moratuwa Debating Team 2016/2017

President - OREPA Student Chapter 2019

Secretary - Mathematics Society - University of Moratuwa 2017/2018

Executive Committee - Sri Lanka Model United Nations 2015

President - Gavel Club of high school (affiliated to Toastmasters International) 2012/2013

Community Service Director - Interact Club of high school 2013/2014

Player - Football Team of high school 2010/2011/2012

Scouting - high school 2009/2010/2011/2012

Cast Member - Theatre Circle of high school 2012/2013