

# KANCHANA RANASINGHE

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## EDUCATION

**Stony Brook University, NY, USA**

*PhD in Computer Science*

Aug 2021 - Present

**University of Moratuwa, Sri Lanka**

*BSc in Engineering; GPA: 3.95/4.20; Awarded Most Outstanding Graduated of the Year*

Dec 2015 - Jan 2020

## 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

## PUBLICATIONS

**On Improving Adversarial Transferability of Vision Transformers**

(under review)

M Naseer\*, **K Ranasinghe\***, S Khan, F Khan, F Porik

**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. Liyanarachchi 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,

**Micro Actions and Deep Static Features for Activity Recognition,**

DICTA, 2017.

S. Ramasinghe, J. Rajasegaran, V. Jayasundara, **K Ranasinghe**, R. Rodrigo and 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

<b>Most Outstanding Graduated of the Year</b> - University of Moratuwa, Sri Lanka	2020
<b>Mahapola Merit Scholarship</b> - Ranked 13th in Sri Lanka at GCE Advanced Level Examination	2014
<b>Participation/ Ranked 296<sup>th</sup> in world</b> - International Mathematical Olympiad (IMO), Columbia	2013
<b>Bronze Medalist</b> - International Mathematics Competition, South Korea	2010
<b>International Representation / National Champion</b> - IGNOU UNESCO Science Olympiad, India	2011

## PROFESSIONAL ACTIVITIES

<b>British Machine Vision Conference</b> - Peer Reviewer	2020, 2021
<b>IEEE Transactions on Circuits and Systems for Video Technology</b> - Peer Reviewer	2017, 2018

## SKILLS

<b>Languages:</b> Python (proficient), MATLAB, C++ (novice)	<b>Frameworks:</b> Tensorflow, PyTorch
<b>Experience &amp; Interests:</b> Computer Vision, Machine Learning, Deep Learning	

## HACKATHON EXPERIENCE

<b>Finalists</b> - Presidential Hackathon organized by the Government of Taiwan	Taiwan, 2019
<b>Asia-Pacific Runners-Up</b> - Innovate FPGA organized by Intel and Terasic	International, 2018
<b>Champions &amp; Best Data Scientist</b> - Datathon organized by Axiata	Colombo, 2019
<b>Champions</b> - CodeSprint 3.0 organized by IdeaMart & IIT	Colombo, 2018

## VOLUNTEER EXPERIENCE / LEADERSHIP

<b>Captain</b> - University of Moratuwa Debating Team	2016/2017
<b>President</b> - OREPA Student Chapter	2019
<b>Secretary</b> - Mathematics Society - University of Moratuwa	2017/2018
<b>Executive Committee</b> - Sri Lanka Model United Nations	2015
<b>President</b> - Gavel Club of high school (affiliated to Toastmasters International)	2012/2013
<b>Community Service Director</b> - Interact Club of high school	2013/2014
<b>Player</b> - Football Team of high school	2010/2011/2012
<b>Scouting</b> - high school	2009/2010/2011/2012
<b>Cast Member</b> - Theatre Circle of high school	2012/2013