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

Royal College, Colombo, Sri Lanka   Grad: Dec 2014
GCE Advanced Level (Mathematics, Physics, Chemistry, General English)   4As / 13th in country / z-score of 2.83
(country-wide university entrance examination taken by over 100,000 students annually)

Other Courses
Deep Learning: 5-course specialization (on Coursera)   (Certificate earned - Apr 2018)
Intermediate C++ (on EdX)   (Certificate earned - Oct 2017)
Machine Learning (on Coursera)   (Certificate earned - Aug 2016)

EXPERIENCE

MBZUAI, Abu Dhabi, UAE - *Research Assistant*   Nov 2020 - Aug 2021
- Self-supervised video representation learning: multi-modal data, contrastive methods (CVPR '22)
- Adversarial attacks and their transferability (ICLR '22)
- Interpretability and robustness of vision transformers (Neurips '21)
- Generative modelling for multi-modal output spaces (ICLR '21)

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
- LIDAR pointcloud analysis based examining of buildings for maintenance and insurance purposes
- Research on state-of-the-art deep learning based instance and semantic segmentation algorithms, implementation and fine-tuning of selected methods using case-specific datasets, and analysis on most suitable approaches
- Implementation of quantized neural network architectures efficient for real-time inference on edge devices

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   CVPR, 2022 (oral)
K Ranasinghe, M Naseer, S Khan, F Khan, M Ryoo

On Improving Adversarial Transferability of Vision Transformers   ICLR, 2022 (spotlight)
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
Runners-Up - 4iR Hackathon organized by SLASSCOM	Colombo, 2018
Runners-Up - LetMeHack organized by Sabaragamu University	Belihuloya, 2018

Runners-Up - Techno Hackathon organized by IESL   Colombo, 2017

Runners-Up - SLTA Hackathon organized by SLTA   Colombo, 2017

Volunteer Experience / Leadership

Captain - University of Moratuwa Debating Team   2016/2017
Reviving and establishing a debating society and team at the university. Training of university debating teams comprising of around 20 debaters. Team emerged 1st runners-up at national level inter-university tournament.

President - OREPA Student Chapter   2019
Leading the Student Chapter of a volunteer past-pupils association group comprising of engineers. Coordinating over 10 annual projects under 5 different avenues by leading an executive committee of 12 and a club membership exceeding 200.

Secretary - Mathematics Society - University of Moratuwa   2017/2018
Leading the university mathematics society comprising of over 50 members in organising weekly forums, intra-campus competitions, and activities for freshers. Initiated a program to hold monthly talks by notable researchers in fields closely linked to mathematics and engineering.

Executive Committee - Sri Lanka Model United Nations   2015
President of a sub-committee. Responsible for organising multiple awareness sessions around the country, coordinating with partners like UNPD and UNFPA, and organising an international conference (Asia's largest student led conference) with over 1000 participants.

President - Gavel Club of high school (affiliated to Toastmasters International)   2012/2013
Responsible for leading executive committee of 7 members, and club of 60 members. Led the organising of a regional competition with over 800 high school participants. Organised multiple workshops for student skills development.

Community Service Director - Interact Club of high school   2013/2014
Giving leadership to a club of over 200 high school students. Organising of a wide range of community service projects targeting school students, rural regions, and selected poor families. Also led three teams that were organising large scale fund raisers: a talent show, a theatre production and a rugby tournament.

Player - Football Team of high school   2010/2011/2012
Represented the high-school football team at multiple regional and national level tournaments. Member of the champion team at the annual Royal Thomian Football encounter in 2011.

Scouting - high school   2009/2010/2011/2012
Patrol Leader, Troop Leader, and Instructor (for one troop comprising of 3 patrols with 6-7 students in each patrol) for scouting at high school. Guiding and monitoring continuous development and weekly activities for all all students of the troop. Also involved in organising multiple outstation year-end camps and various scouting events at school.

Cast Member - Theatre Circle of high school   2012/2013
Acting in multiple theatrical performances and public productions at high school. Emerging champions at multiple inter-school theatre contests.