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; Awarded Most Outstanding Graduand of the Year
Senior Thesis Title: "Realtime Multi-Object Tracking and Pixelwise Segmentation"

Research Experience

Google Research, NYC, USA - *Student Researcher* March 2024 - Dec 2024
- Continuous-space CRF formulation for modeling natural images
- Integrating CRF with latent diffusion for efficient image generation

Meta AI Research, NYC, USA - *Research Scientist Intern* May 2023 - Dec 2023
- Spatial reasoning in multi-modal large language models (CVPR '24)
- Localization awareness in video-language models

Apple MLR, Cupertino, USA - *Machine Learning Research Intern* May 2022 - Sep 2022
- Multi-modal self-supervised representation learning (ICCV '23)
- Interpretability and robustness of vision language models

MBZUAI, Abu Dhabi, UAE - *Research Assistant* Nov 2020 - Aug 2021
- Representation learning: contrastive losses, self-supervised objectives (ICCV '21)
- Interpretability, robustness, and adversarial attacks for vision transformers (NeurIPS '21, ICLR '22)
- Generative modelling for multi-modal output spaces (ICLR '21)

Wenn ASA, Stavanger, Norway - *Machine Learning Engineer (remote)* Jan 2019 - Oct 2020
- Leading team of three associate data scientists for vehicle damage detection project
- Focus on efficient mobile implementations, instance segmentation models, and active learning

FiveAI, Cambridge, UK - *Research Intern* June 2018 - Dec 2018
- Perception team of self-driving startup
- 3D orientation estimation: improve occluded object handling in videos with synthetic data

Selected Awards

Outstanding Demo Award at CVPR 2023
Burgert, Ranasinghe, Li, Ryoo, *"Diffusion Illusions: Hiding Images in Plain Sight"*

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

Publications - Conference

Understanding Long Videos with Multimodal Language Models ICLR, 2025
K Ranasinghe, X Li, K Kahatapitiya, M S Ryoo

LLaRA: Supercharging Robot Learning Data for Vision-Language Policy ICLR, 2025
X Li, C Mata, J Park, K Kahatapitiya, Y Jang, J Shang, K Ranasinghe, R Burgert, M Cai, Y Lee, M S Ryoo

Unsupervised Domain Adaptive Segmentation using Domain-Agnostic Text ECCV, 2024
C Mata, K Ranasinghe, M S Ryoo

Learning to Localize Objects Improves Spatial Reasoning in Visual-LLMs CVPR, 2024
K Ranasinghe, S N Shukla, O Poursaeed, M S Ryoo, T Y Lin

Too Many Frames, not all Useful: Efficient Strategies for Long-Form Video QA NeurIPS-W, 2024
J Park, K Ranasinghe, K Kahatapitiya, W Ryoo, D Kim, M S Ryoo

Language Repository for Long Video Understanding NeurIPS-W, 2024
K Kahatapitiya, K Ranasinghe, J Park, M S Ryoo

Diffusion Illusions: Hiding Images in Plain Sight SIGGRAPH, 2024
R Burgert, X Li, A Leite, K Ranasinghe, M Ryoo

Hierarchical Text-to-Vision Self Supervised Alignment for Improved Histopathology Representation Learning MICCAI 2024
H Watawana, K Ranasinghe, T Mahmood, M Naseer, S Khan, F S Khan

Language-based Action Concept Spaces Improve Video SSL NeurIPS, 2023
K Ranasinghe, M S Ryoo

Perceptual Grouping in Contrastive Vision-Language Models ICCV, 2023
K Ranasinghe, B McKinzie, S Ravi, Y Yang, A Toshev, J Shlens

Peekaboo: Text to Image Diffusion Models are Zero-Shot Segmentors CVPR workshop, 2023
R Burgert, K Ranasinghe, X Li, M S Ryoo

Self-supervised Video Transformers CVPR, 2022 (oral)
K Ranasinghe, M Naseer, S Khan, F Khan, M S 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
(*listed among top 15 most cited papers at NeurIPS 2021* - link)

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, S Khan, N Barnes, S Gould

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

Micro Actions and Deep Static Features for Activity Recognition DICTA, 2017
S. Ramasinghe, J. Rajasegaran, V. Jayasundara, K. Ranasinghe, R. Rodrigo and A. Pasqual

Publications - Under Review

LatentCRF: Continuous CRF for Efficient Latent Diffusion *under review*
K Ranasinghe, S Jayasumana, A Veit, A Chakrabarti, D Glasner, M S Ryoo, S Ramalingam, S Kumar

Publications - Journal

Combined Static & Motion Features for Deep-Networks Based Activity Recognition in Videos, S. Ramasinghe, J. Rajasegaran, V. Jayasundara, K Ranasinghe, R. Rodrigo and A. A. Pasqual, IEEE Transactions on Circuits and Systems for Video Technology, vol. 29, Sept. 2019.

Patents

Kanchana Ranasinghe, Muhammad Muzammal Naseer, Salman Khan, Fahad Khan, **"System and Method for Self-supervised Video Transformer."** US Patent US20240169692A1 filed on 11/21/2022.

Invited Talks

"Visual Spatial Reasoning with Multimodal LLMs", presented (remotely) at Deep Learning Session in Radiology Department, Penn State University, PA (Jan 2025).

"MVU - an LLM-based framework for solving Long Video Question Answering benchmarks", presented (remotely) at Multimodal Weekly organized by Twelve Labs (Aug 2024).

"Learning to Localize Objects Improves Spatial Reasoning in Visual-LLMs", presented at NYC Vision RG, Google Research, NYC (Apr 2024).

"Perceptual Grouping in Contrastive Vision-Language Models", presented at Electronics and Telecommunications Department, University of Moratuwa, Sri Lanka (Jan 2024).

"Perceptual Grouping in Contrastive Vision-Language Models", presented (remotely) at Computer Vision Talks series, ETS Montreal (Oct 2023).

Teaching

Stony Brook University, NY, USA

- Teaching assistant for CSE 101 course on Introduction to Digital Intelligence
- Teaching assistant for CSE 215 course on Foundations of Computer Science course
- Supporting for graduate level computer vision seminar CSE 656

University of Moratuwa, Sri Lanka

- Teaching assistant for undergraduate course on Introduction to Computer Vision
- Supporting for undergraduate level computer vision seminar

Service

Reviewing

- Conference reviewer: CVPR, ICCV, ECCV, NeurIPS, ICLR, ICML, ICRA 2022 - present
- Journal reviewer: IJCV, TCSVT 2021 - present

Mentoring

- Mentor for undergraduate computer science students at Women in Engineering in Sri Lanka 2023
- Mentor for machine learning competition teams at University of Moratuwa, Sri Lanka 2023
- Mentor undergraduates from University of Moratuwa, Sri Lanka in computer vision research projects and academic writing 2023 - present

Other Awards

Graduate Fellowship - Stony Brook University, NY, USA 2022

National Merit Scholarship - Ranked 13th (2.83 z-score) in Sri Lanka at GCE A/L Examination 2014