Kumara Kahatapitiya

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Research Interests

Video Understanding, Diffusion Models for Video Editing and Generation, Language + Vision

Education

Stony Brook University, Stony Brook, NY

Ph.D, Computer Science, 2019 - 2024 (expected)

GPA: 4.0/4.0, Thesis: Video Representations: A View on Inference and Label Efficiency

University of Moratuwa, Sri Lanka

B.Sc.(Hons.), Electronic & Telecommunication Engineering, 2014 - 2018

GPA: 4.05/4.20

Employment

Stony Brook University, Stony Brook, NY

Research Assistant, Summer 2020 - Present

Teaching Assistant, Fall 2019 - Spring 2020

Qualcomm AI Research, Amsterdam, Netherlands

Research Intern, Summer 2023

Google DeepMind, New York City, NY

Student Researcher, Spring 2022 - Spring 2023

Wormpex AI Research, Bellevue, WA

Research Intern, Summer 2021

University of Moratuwa, Sri Lanka

Research Assistant, Spring 2018 - Summer 2019

Data61 - CSIRO, Sydney, Australia

Intern, Fall 2016

Publications

Preprints

1. Language Repository for Long Video Understanding
   Kumara Kahatapitiya, Kanchana Ranasinghe, Jongwoo Park, Michael S. Ryoo
   arXiv 2024 [preprint] [code]

2. Understanding Long Videos in One Multimodal Language Model Pass
    Kanchana Ranasinghe, Xiang Li, <u>Kumara Kahatapitiya</u>, Michael S. Ryoo
    arXiv 2024 `[project-page]` `[preprint]` `[code]`

3. Object-Centric Diffusion for Efficient Video Editing
    <u>Kumara Kahatapitiya</u>, Adil Karjauv, Davide Abati, Yuki M. Asano, Fatih Porikli, Amirhossein Habibian
    arXiv 2024 `[project page]` `[preprint]`

Peer-reviewed Articles

4. VicTR: Video-conditioned Text Representations for Activity Recognition
    <u>Kumara Kahatapitiya</u>, Anurag Arnab, Arsha Nagrani, Michael S. Ryoo
    CVPR 2024 `[paper]`

5. Grafting Vision Transformers
    Jongwoo Park, <u>Kumara Kahatapitiya</u>, Donghyun Kim, Shivchander Sudalairaj, Quanfu Fan, Michael S. Ryoo
    WACV 2024 `[paper]` `[poster]`

6. SWAT: Spatial Structure Within and Among Tokens
    <u>Kumara Kahatapitiya</u>, Michael S. Ryoo
    IJCAI 2023 `[paper]` `[code]` `[slides]`

7. Token Turing Machines
    Michael S. Ryoo, Keerthana Gopalakrishnan, <u>Kumara Kahatapitiya</u>, Ted Xiao, Kanishka Rao, Austin Stone, Yao Lu,
    Julian Ibarz, Anurag Arnab
    CVPR 2023 `[paper]` `[code]` `[teaser]`

8. Weakly-guided Self-supervised Pretraining for Temporal Activity Detection
    <u>Kumara Kahatapitiya</u>, Zhou Ren, Haoxiang Li, Zhenyu Wu, Michael S. Ryoo, Gang Hua
    AAAI 2023 `[paper]` `[code]` `[talk]` `[poster]`

9. StARformer: Transformer with State-Action-Reward Representations for Visual Reinforcement Learning
    Jinghuan Shang, <u>Kumara Kahatapitiya</u>, Xiang Li, Michael S. Ryoo
    ECCV 2022 `[paper]` `[code]` `[poster]`
    T-PAMI `[paper]`

10. MS-TCT: Multi-Scale Temporal ConvTransformer for Action Detection
    Rui Dai, Srijan Das, <u>Kumara Kahatapitiya</u>, Michael S. Ryoo, Francois Bremond
    CVPR 2022 `[paper]` `[code]`

11. Swift: Adaptive Video Streaming with Layered Neural Codecs
    Mallesham Dasari, <u>Kumara Kahatapitiya</u>, Samir Das, Aruna Balasubramanian, Dimitris Samaras
    NSDI 2022 `[paper]` `[code]` `[slides]`

12. Coarse-Fine Networks for Temporal Activity Detection in Videos
    <u>Kumara Kahatapitiya</u>, Michael S. Ryoo
    CVPR 2021 `[paper]` `[code]` `[talk]` `[poster]`

13. Exploiting the Redundancy in Convolutional Filters for Parameter Reduction
    <u>Kumara Kahatapitiya</u>, Ranga Rodrigo
    WACV 2021 `[paper]` `[code]` `[talk]`

14. Feature-dependent Cross-Connections in Multi-Path Neural Networks
    Dumindu Tissera, Kasun Vithanage, Rukshan Wijesinghe, <u>Kumara Kahatapitiya</u>, Subha Fernando, Ranga Rodrigo
    ICPR 2020 `[paper]`

15. Context-Aware Automatic Occlusion Removal
    <u>Kumara Kahatapitiya</u>, Dumindu Tissera, Ranga Rodrigo
    ICIP 2019 [paper] [code]

Distinctions

Finalist (1/30) for Adobe Research Fellowship, 2022

Nomination for Microsoft Research PhD Fellowship, 2022

Nomination for Google PhD Fellowship, 2022

Gold Medalist, Electronic & Telecommunication Engineering, University of Moratuwa, 2018

Dean's List Recognition (7/8 semesters), University of Moratuwa, 2014-2018

National Inter-University Statistics Champions, Sri Lanka, 2015

Presidential Recognition for the excellence in national examinations, 2009, 2012

Academic Service

Reviewer at CVPR, ICCV, ECCV, TPAMI, IJCV, NeurIPS, ICML, AAAI, WACV

Open-source Projects

X3D-Multigrid [code]

Optimal Transport in NumPy [code]

References

Prof. Michael S. Ryoo, SUNY Empire Innovation Associate Professor
    Computer Science Department, Stony Brook University, Stony Brook, NY
    mryoo@cs.stonybrook.edu

Prof. Dimitris Samaras, SUNY Empire Innovation Professor
    Computer Science Department, Stony Brook University, Stony Brook, NY
    samaras@cs.stonybrook.edu

Dr. Amirhossein Habibian, Director of Engineering
    Qualcomm AI Research, Amsterdam, Netherlands
    ahabibian@qti.qualcomm.com

Dmitry Kalashnikov, Staff Software Engineer
    Google DeepMind, New York City, NY
    dkalashnikov@google.com

Dr. Ranga Rodrigo, Head of Department
    Electronic & Telecommunication Engineering, University of Moratuwa, Sri Lanka
    ranga@uom.lk