

# Sanjay Haresh

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## Research Interest

Deep Learning, Self-Supervised Learning, 3D Computer Vision

## Education

Sept 2021 – **Simon Fraser University**, Burnaby, BC, Canada,

April 2023 MSc. (Thesis) Computing Science,  
GPA – 4.20/4.33.

Aug 2015 – **National University of Computer and Emerging Sciences**, Karachi, Pakistan,

May 2019 BS Computer Science,  
GPA – 3.96/4.0.

**Gold Medal – Ranked 1st out of 332 students**

## Selected Publications ([Google Scholar](#))

2022 **Articulated 3D Human-Object Interactions from RGB Videos: An Empirical Analysis of Approaches and Challenges**,  
*International Conference on 3D Vision (3DV)*, 2022.

**Sanjay Haresh**, Xiaohao Sun, Hanxiao Jiang, Angel Chang, Manolis Savva

2022 **Unsupervised Activity Segmentation by Joint Representation Learning and Online Clustering**,  
*Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.

**Sanjay Haresh\***, Sateesh Kumar\*, Awais Ahmed, Andrey Konin, Zeeshan Zia, Quoc-Huy Tran (\*Equal Contribution)

2021 **Learning by Aligning Videos in Time**,  
*Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.

**Sanjay Haresh\***, Sateesh Kumar\*, Huseyin Coskun, Shahram Najam Syed, Andrey Konin, Zeeshan Zia, Quoc-Huy Tran (\*Equal Contribution)

2020 **Towards Anomaly Detection in Dashcam Videos**,  
*Intelligent Vehicles Symposium (IV)*, 2020.

**Sanjay Haresh\***, Sateesh Kumar\*, Zeeshan Zia, Quoc-Huy Tran (\*Equal Contribution)

2019 **Focused Anchor Loss: Cost-Sensitive learning of discriminative features for imbalanced classification**,  
*Asian Conference on Machine Learning (ACML)*, 2019.

**Sanjay Haresh\***, Bahram Baloch\*, Sateesh Kumar\*, Abeerah Rehman, Tahir Syed (\*Equal Contribution)

Patent 2022 **System and method for correlating video frames in a computing environment**,  
*US Patent 11,368,756*, 2022.

**Sanjay Haresh**, Sateesh Kumar, Andrey Konin, Zeeshan Zia, Quoc-Huy Tran

Patent 2021 **System and Method for Building Computational Models of a Goal-Driven Task from Demonstration**,  
*US Patent 11,017,690*, 2021.  
**Sanjay Haresh**, Sateesh Kumar, Andrey Konin, Zeeshan Zia, Quoc-Huy Tran

## Experience

Sept 2021 – **Research Assistant**, *Simon Fraser University*.

Present *Advisors: Prof. Manolis Savva*

- o Established a benchmark of reconstructing articulated human-object interaction in 3D from RGB Videos.
- o Proposed a primitive based method for reconstructing 3D abstractions of articulated objects. Work accepted at **3DV 2022**.

June 2019 – **Research Engineer, Computer Vision**, *Retrocausal AI*,

Aug 2021 backed by TechStars, NASA Human Research Program, PACCAR.

*Advisors: Dr. Zeeshan Zia & Dr. Quoc-Huy Tran*

- o **Unsupervised Activity Segmentation:** Worked on unsupervised activity segmentation. We use temporal optimal transport and temporal coherence constraint for jointly learning representations and clustering while being orders of magnitude more memory efficient than previous methods. Work published at **CVPR 2022**.
- o **Self-Supervised Video Representations:** Worked on self-supervised video representation learning via dynamic time warping and contrastive learning. We use video alignment as a proxy to learn good features representations for downstream tasks such as fine-grained action recognition. Work published at **CVPR 2021**.
- o **Anomaly Detection in Dash-cam Videos:** Curated a large dataset of dashcam videos for anomaly understanding in road scenes. Explored encoder-decoder architectures for contextual anomalies in videos. This work was published at **IV 2020**.

## Awards & Achievements

2022 FAS Graduate Fellowship, SFU, Canada

2019 **Gold Medal for 1st Rank** in Computer Science - 2019, NUCES-Karachi.

2015-2019 Dean's List for all semesters, NUCES-Karachi.

2019 Winner Data Science Competition, Softec'19 Lahore: **Ranked 1st out of 50 teams from across Pakistan**.

2018-2019 Founder/Head - Artificial Intelligence and Machine Learning Club, ACM-NUCES.

2015-2019 Won multiple local programming competitions.

## Skills

**Programming Languages:** Python, C/C++, Java, MATLAB, R, Bash

**Library and Tools:** Tensorflow, Pytorch, Keras, Opencv, Scikit-Learn,  $\text{\LaTeX}$ , AWS-EC2

## Academic Service

Volunteer Student Volunteer, SIGGRAPH 2022

Reviewer CVPR 2023, IROS 2022, WACV 2022