Mamshad Nayeem Rizve

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EDUCATION

PhD in Computer Science *August 2018–Present*
Center for Research in Computer Vision (CRCV)
University of Central Florida (UCF), Florida, USA
Research areas: Semi-Supervised Learning, Few-Shot Learning, Self-Supervised Learning
Overall GPA: 3.96/4.0

BSc in Electrical and Electronic Engineering *February 2011–March 2016*
Bangladesh University of Engineering and Technology (BUET), Dhaka, BD
Thesis: Automatic Bleeding Detection from Wireless Capsule Endoscopy Images
Overall GPA: 3.78/4.0 (with Honours)

SELECTED PUBLICATIONS

- **Mamshad Nayeem Rizve**,Salman Khan, Fahad Shahbaz Khan, Mubarak Shah; **Exploring Complementary Strengths of Invariant and Equivariant Representations for Few-Shot Learning**; Conference on Computer Vision and Pattern Recognition **(CVPR)** 2021
- **Mamshad Nayeem Rizve**, Kevin Duarte, Yogesh S Rawat, Mubarak Shah; **In Defense of Pseudo-Labeling: An Uncertainty-Aware Pseudo-Label Selection Framework for Semi-Supervised Learning**; International Conference on Learning Representations **(ICLR)** 2021
- **Mamshad Nayeem Rizve**, Ugur Demir, Praveen Tirupattur, Aayush Jung Rana, Kevin Duarte, Ishan Dave, Yogesh Singh Rawat, Mubarak Shah; **Gabriella: An Online System for Real-Time Activity Detection in Untrimmed Security Videos**; International Conference on Pattern Recognition **(ICPR)** 2020 (Best Paper Award)
- Nazmul Karim, **Mamshad Nayeem Rizve**, Nazanin Rahnavard, Ajmal Mian, Mubarak Shah; **UNICON: Combating Label Noise Through Uniform Selection and Contrastive Learning**; Conference on Computer Vision and Pattern Recognition **(CVPR)** 2022
- Ishan Dave, Rohit Gupta, **Mamshad Nayeem Rizve**, Mubarak Shah; **TCLR: Temporal Contrastive Learning for Video Representation**; Computer Vision and Image Understanding **(CVIU)** 2022

EXPERIENCE

Graduate Research Assistant *August 2018–Present*
Center for Research in Computer Vision (CRCV) *University of Central Florida*

- Deep Intermodal Video Analytics (DIVA)
  - Performed localization and classification of actions from a given untrimmed video sequence
  - 1st place in ActEV SDL, ActivityNet Challange (TASK D), CVPR-2020
  - 1st position in MEVA SDL 2019
  - 2nd place in TRECVid 2019
- Florida Panther Conservation Project
  - Worked on recognition of camera trapped animals from a highly imbalanced natural dataset.
  - Collaborated with the Science and Planning in Conservation Ecology (SPICE) Lab of UCF

Software Engineering Intern *May 2021–August 2021*
Perception *Aurora Innovation, INC*

- Worked on detecting emergency-vehicles based on siren audio data.
  - Created an emergency-vehicle siren dataset
  - Implemented the baseline and state-of-the-art audio classification methods for emergency-vehicle detection.

– Improved over the state-of-the-art methods by incorporating self-supervision and knowledge distillation.

System Engineer *September 2016–July 2018*
Transmission Network Operations *Grameenphone Limited, Bangladesh*

- Supervised and monitored a transmission network consisting of more than 15000 nodes
- Developed an analytical tool to identify microwave links with line of sight problem based on received signal level
- Developed an interactive chat bot to check real time status of Huawei Backhaul routers
- Member of one of the finalist teams of Telenor Group's global entrepreneurship program (IGNITE)

SELECTED ACADEMIC PROJECTS

- **Open-World Semi-Supervised Learning**
  - Proposed a novel bi-level optimization rule to discover novel classes by minimizing a pairwise loss.
  - Transformed the open-world SSL problem to a closed-world SSL problem to obtain further improvement.
- **Semantic Segmentation**
  - Proposed Patch-Dice loss to address severe intra-class scale variance
  - Patch-Dice loss is Dice loss computed at a local neighborhood
  - Worked on the MS COCO dataset and implemented *DeepLabv3+*
- **Unsupervised Keypoint Detection**
  - Implemented *Unsupervised Learning of Object Landmarks through Conditional Image Generation*
  - Incorporated a feature denoising block to improve the performance
- **Video Object Segmentation (VOS)**
  - Incorporated self-attention blocks, feature pyramid network and atrous convolution to improve VOS
  - Implemented the method proposed in *YouTube-VOS: Sequence-to-Sequence Video Object Segmentation*

SKILLS

Programming	Python, MATLAB, C/C++, Assembly, SQL
Libraries	Deep learning (Pytorch, Keras, Tensorflow), OpenCV, Django

HONORS AND AWARDS

- Best Paper Award at ICPR –2020
- UCF ORC Doctoral Fellowship – 2018
- BUET Dean's List – 2012, 2015
- Education Board Scholarship – 2008, 2010

RELEVANT COURSE WORKS

Computer Vision; Advanced Computer Vision; Machine Learning; Current Topics in ML; Robots, Agents, and Humans; Design and Analysis of Algorithms; Random Signals and Processes; Probability and Statistics; Linear Algebra; Calculus I and II; Ordinary and Partial Differential Equations

REFERENCE

Dr. Mubarak Shah
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Director, Center for Research in Computer Vision (CRCV)
University of Central Florida
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Email: shah@crcv.ucf.edu