Muhammad Ferjad Naeem

Curriculum Vitae

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ferjad.github.io

Education

2021–2024 **Ph.D. Computer Vision and Machine Learning**,
ETH Zurich, Switzerland
Advisor: Prof. Luc Van Gool, PD. Dr. Federico Tombari (Google)
Google Ph.D. Fellowship with appointment as Research Consultant at Google.

2018–2021 **M.Sc. Computer Science (Biomedical Computing)**,
Technical University of Munich, Germany
Advisor: Prof. Nassir Navab, Prof. Zeynep Akata

Selected Publications

Journal
- *"Learning graph embeddings for open world compositional zero-shot learning"*.
Massimiliano Mancini*, **Muhammad Ferjad Naeem***, Yongqin Xian, Zeynep Akata.
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) 2022.

Conference
- *I2DFormer: Learning Image to Document Attention for Zero-Shot Image Classification*.
Muhammad Ferjad Naeem, Yongqin Xian, Luc Van Gool, Federico Tombari.
Neural Information Processing Systems (NeurIPS) 2022.
- *3D Compositional Zero-shot Learning using DeCompositional Consensus*.
Muhammad Ferjad Naeem, E.P. Ornek, Yongqin Xian, Luc Van Gool, Federico Tombari.
European Conference on Computer Vision (ECCV) 2022.
- *"Learning Graph Embeddings for Compositional Zero-shot Learning"*.
Muhammad Ferjad Naeem, Yongqin Xian, Federico Tombari, Zeynep Akata.
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2021.
- *"Open World Compositional Zero-Shot Learning"*.
Massimiliano Mancini*, **Muhammad Ferjad Naeem***, Yongqin Xian, Zeynep Akata.
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2021.
- *"Reliable Fidelity and Diversity Metrics for Generative Models"*.
Muhammad Ferjad Naeem, Seong Joon Oh, Yunjey Choi, Youngjung Uh, Jaejun Yoo.
International Conference on Machine Learning (ICML) 2020.

Experience

March 2021 – Present **Google Zürich** + **ETH Zürich**: Doctoral Researcher
Google and Computer Vision Lab at ETH Zurich
I am pursuing my PhD Research jointly between Google and Computer Vision Lab at ETH. My research focuses on multi-modal learning and developing compositional machine learning models. My published works in this direction utilizes Part-Object relations, discovering graph relations from data and learning the compositionality of visual classes from language.

Dec 2020 – Feb 2021 **Nvidia**: Computer Vision Intern
Remote from Munich, Germany (COVID) with Nvidia, Santa Clara, USA
I worked in the DriveIX team on various deep learning based solutions for the AI enabled cockpit for driver assistance.

April 2020 – Nov 2020 **Eberhard Karls University of Tübingen**: Visiting Researcher
Tübingen AI Research Center, Germany
I worked on Compositional zero shot learning with Prof. Zeynep Akata. I proposed new SOTA methods and benchmarks that were published as two papers at CVPR2021.

September 2019 – December 2019 **Naver Corp. Clova AI Research**: Intern
Naver Green Factory, Seongnam, South Korea
I worked on evaluation metrics for generative models under the supervision of Dr. Seong Joon Oh and Dr. Jaejun Yoo. The work was aimed at improving the precision and recall baseline from NeurIPS19 against outliers and bias towards ImageNet domain. The work was presented at ICML2020.

August 2018 – Present **Technical University of Munich**: Research Assistant
Computer Aided Medical Procedures (CAMP@TUM), Munich, Germany
I worked on problems relating to robustness in deep neural networks and generative models under the supervision of Prof. Nassir Navab. In this direction I explored Adversarial Attacks, Uncertainty in Deep Learning, Interpretable Networks and Data Augmentation. I also worked on distribution trimming for robustness to outliers in generative models.

May 2015 – July 2018 **National University of Sciences and Technology**: Research Assistant
TUKL-NUST R&D Center, Islamabad, Pakistan
I worked on sequence to sequence modeling for problems relating to Optical Character recognition of printed and handwritten text under the supervision of Prof. Faisal Shafait. In this direction, I proposed several architectural improvements and collected new dataset that allowed for further research in the field. My work here led to two conference and one journal publications.

June 2017 – September 2017 **Hochschule RheinMain**: Research Assistant (DAAD Scholar)
Computer Vision and Mixed Reality Lab, Wiesbaden, Germany
I worked on the challenging problem of Underwater Fish detection and tracking under DAAD grant FIBEVID supervised by Prof. Adrian Ulges. In this direction, I proposed an end to end pipeline using FasterRCNN for detection and a Kalman Filtering based algorithm for tracking.

Achievements and Grants

May 2020 Google AI Residency 2020 finalist

August 2018 "International Undergraduate Excellence Award" from Computer Aided Medical Procedures(CAMP) group at Technical University of Munich, Germany to join Prof. Nassir Navab's group.

November 2018 "Korea Advanced Institute of Science and Technology - KAIST" EE-Camp Travel award for exceptional performance during undergraduate studies.

June 2017 DAAD grant for "Fish Biodiversity Estimation by Low-Cost Non-Destructive Video Based Sampling", German Academic Exchange Service (DAAD), 2017, to move to Wiesbaden Germany for the Summer of 2017

November 2017 ICDAR Travel Grant sponsored by International Association of Pattern Recognition (IAPR) to attend ICDAR 2017 in Kyoto Japan