

HANOONA ABDUL RASHEED

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PERSONAL PROFILE

Computer Vision engineer adept in research and development of deep learning driven computer vision applications. Currently working on research exploring the potentials of multi-modal understanding from vision and language to build scalable general purpose vision systems, that continually learn and can generalize to various domains and tasks.

RESEARCH PROJECTS

Bridging the Gap between Object and Image-level Representations for Open-Vocabulary Detection *May 2022 (NIPS 2022)*

Hanoona Rasheed, Muhammad Maaz, Muhammad Uzair Khattak, Salman Khan, Fahad Khan

The work solves the Open-vocabulary detection (OVD) problem using pretrained CLIP model, adapting it for object-centric local regions using region-based distillation and image-level weak supervision. The work address this problem by performing object-centric alignment of the language embeddings from the CLIP model. The proposed model seeks to minimize the gap between object and image-centric representations in the OVD setting.

Class-agnostic Object Detection with Multi-modal Transformer *Mar 2022 (ECCV 2022)*

Muhammad Maaz, Hanoona Rasheed, Salman Khan, Fahad Khan, Rao M. Anwer, Ming-Hsuan Yang

The work explores the potential of the recent Multi-modal Vision Transformers (MViTs) for class-agnostic object detection. Our extensive experiments across various domains and novel objects show the state-of-the-art performance of MViTs to localize generic objects in images. We also develop an efficient and flexible MViT architecture using multi-scale feature processing and deformable self-attention that can generate proposals given a specific language query.

MaPLe: Multi-modal Prompt Learning *Sep 2022 (Under review)*

Muhammad Uzair Khattak, Hanoona Rasheed, Muhammad Maaz, Salman Khan, Fahad Khan

The work proposes to learn prompts in both vision and language branches of pretrained CLIP for adapting it to different downstream tasks. Previous works only use prompting in either language or vision branch. We note that using prompting to adapt representations in a single branch of CLIP (language or vision) is sub-optimal since it does not allow the flexibility to dynamically adjust both representation spaces on a downstream task. To this end, we propose Multi-modal Prompt Learning (MaPLe) for both vision and language branches to improve alignment between the vision and language representations.

EDUCATION

Mohamed bin Zayed University of Artificial Intelligence, UAE *Dec 2020 - Dec 2022*
[Ph.D. in Computer Vision](#)

Mohamed bin Zayed University of Artificial Intelligence, UAE *Dec 2020 - Dec 2022*
[Research Based Masters in Computer Vision](#)
CGPA: 4.0/4.0

APJ Abdul Kalam Technological University, India *Jun 2016 - Sept 2018*
[M.Tech Signal Processing](#)
CGPA: 9.18/10.0 (First class with honors, Master thesis patented)

University of Calicut, India *Mar 2012 - Apr 2016*
[B.Tech Biomedical Engineering](#)
CGPA: 8.49/10.0 (First class with honors)

WORK EXPERIENCE

Unique World Robotics, UAE
Software Engineer

Oct 2019 - Apr 2020

Key responsibilities included leading a team in developing in-depth, value addition courses and curriculum on artificial intelligence and software robotics, consultant and trainer to corporations on AI in robotic process automation, part of research&development team in deep learning in robotic development. Key projects include vision for Alton robot and AI integrated RPA for document analysis in banking.

Robert Bosch Engineering and Business Solutions, India
Signal Processing Engineer

Jan 2018 - Jul 2019

Centre of excellence for chemometrics and machine learning, innovations and incubation dept.

- Skills, Knowledge and competencies include:
 - Advanced skills in data-preprocessing and using exploration and visualization tools.
 - Critical awareness of the capabilities and limitations of the different learning algorithms.
 - Advanced capabilities to critically analyze, evaluate various spectral data - NIR, MIR, and Hyperspectral imaging.
 - Provide expertise recommendations of machine learning tools for chemoemtric analysis.
- Key projects:
 - Milk Adulterant Detector research phase 3 to the productization level.
 - Software Modelling of Infrared Spectroscopic Simulator - Project Lead.

Robert Bosch Engineering and Business Solutions, India
Research Intern

Sep 2017 - Sep 2018

Intensive training conducted by senior engineers in team with assistance from a team of ‘Top 85’ scientists from Bosch Germany. Completed master thesis *Near Infrared Spectroscopy for Composition Analysis of Milk* and concept patented under Bosch. Developed machine learning and chemometric models and tools for Fat, lactose and protein concentration detection in milk.

RESEARCH PROJECTS

- Self Supervised Learning using Jigsaw Augmentation for Fine-grained classification
- NIR Spectroscopy for Composition Analysis of Bovine Milk (Bosch)
- Milk Adulterant Detector research phase 3 to the productization level (Bosch)
- Diabetic retinopathy classification using deep CNN & image enhancement

TECHNICAL STRENGTHS

Computer Sciences
Programming Languages
Softwares & Tools
ML and DL Frameworks

Computer Vision, Deep Learning, Machine Learning
Python, C
Pycharm, MATLAB
PyTorch

ACHIEVEMENTS

- Cat-vs-Dogs Kaggle challenge First Prize Winner MBZUAI (2020)
- Paper Presentation Award, KMCTCEW (2016, 2018)
- Best Manager Award, KMCTCEW (2016)
- Calicut University Engineering Rank: 4 (2016)
- Red Crescent Volunteer, Abu Dhabi, UAE (2020)

REFERENCES

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