JAMEEL HASSAN

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Education

Johns Hopkins University, Maryland, USA   **Aug 2024 – Present**
PhD in Electrical & Computer Engineering
- Research Focus: *Robust representation learning for lidar perception using foundational vision-language models.*
- Supervised by Prof. Vishal Patel.

Mohamed Bin Zayed University of Artificial Intelligence, Abu Dhabi, UAE   **Aug 2022 – Jun 2024**
Master of Science (Research) in Computer Vision   *CGPA 3.95/4.0*
- Thesis: *Test-Time Adaptation of Foundational Vision-Language Models*
- Relevant Coursework: Object Recognition and Detection, Deep Learning, Parallel & Distributed Machine Learning

University of Peradeniya, Sri Lanka   **Nov 2015 – July 2020**
Bachelor of Science in Engineering, Electrical & Electronics   *CGPA 3.65/4.0 (Top 10%)*

Projects

CLIP meets DINO | *Vision-Language models, Self-supervised learning*   **Mar 2024**
- Designed a lightweight label-free learning method to improve vision language models.
- Combines the distinct advantages of self-supervised models, known for their strong visual representations, with vision-language models that excel in generalizability.

Prompt Align | *Test-Time Adaptation, Vision Language models, Foundation models*   **May 2023**
- Designed a zero-shot test-time prompt learning strategy, handling the distribution shift in test data for vision language models for robust image understanding. — NeurIPS 2023

Language Supervision for 3D Instance Segmentation | *Vision-Language models, Instance Segmentation*   **April 2023**
- Analyzed and established the potential of language supervision using CLIP for 3D point-cloud instance segmentation and its effectiveness in the open-world setting.

Language as an Adversary for CLIP | *Vision-Language models, Adversarial Attacks*   **December 2022**
- Designed an adversarial attack on the CLIP model using language as an adversary.
- Showed effectiveness by dropping the model accuracy below 50% on CIFAR10, CIFAR100 and Caltech101 datasets.

YOLOngv8 | *Long Tail Distributions, Object Detection*   **April 2023**
- Adapted the YOLOv8 model for long tail object detection on the iSAID aerial images dataset.
- Used a prototype based contrastive loss with dynamic calibration for long tail nature of dataset.

Video Restoration | *Blind Face Restoration, Video Restoration*   **December 2023**
- Adapting image based face restoration model to videos – discontinued due to lack of resources

Parallel & Distributed ViT | *Parallel and Distributed ML, Vision Transformers*   **December 2023**
- Designed a parallel and distributed implementation of the ViT-B/16 architecture.
- Implemented a pipeline paralleled version, combined with distributed data parallel strategy.

Experience

Vision & Image Understanding Lab   **Aug 2024 – Present**
Research Assistant   *Maryland, USA*
- Building embodied navigation agent based on open ended language queries.

Inception Institute of Artificial Intelligence   **May 2023 – July 2023**
AI Research Intern   *Abu Dhabi, UAE*
- Resolved edge cases in Blind Face Restoration using VQGANs, such as viewpoint change and closed eyes setting.
- Extending image face restoration to videos.

Intelligent Visual Analytics Lab (IVAL), MBZUAI   **Aug 2022 – Jun 2024**
Graduate Research Assistant   *Abu Dhabi, UAE*
- Explored the robustness and generalizability of CLIP in image classification, and adaptability to instance segmentation.
- Co-supervised new masters students at IVAL lab, working on Vision-Language models for image understanding.

- Teaching assistant for AI701 (Introduction to Artificial Intelligence) at MBZUAI.
  Responsible for course material preparation and mentoring three course projects.

Veracity AI   **Oct 2021 – May 2022**
Machine Learning Engineer   *Colombo, Sri Lanka*
- Designed Machine Learning algorithms for vehicle damage detection to automate vehicle insurance claiming.
- Designed a car localization component using Mask RCNN reducing False positives in damage detection by 12%.
- Researched and analyzed curriculum learning approach for improvement in training time.

Technical Skills

Programming: Python, C, MATLAB, Assembly
Technologies/Frameworks: PyTorch, Tensorflow, OpenCV, Parallel ML systems, Git, Linux

Publications

- Fazli Imam, Rufael Marew, **Jameel Hassan**, Mustansar Fiaz, Alham Fikri Aji, Hisham Cholakkal, *CLIP meets DINO for Tuning Zero-Shot Classifier using Unlabeled Image Collections.* Under Review

- Uzair Khattak, Ferjad Naeem, **Jameel Hassan**, Muzammal Naseer, Federico Tombari, Fahad Khan, Salman Khan, *Complex Video Reasoning and Robustness Evaluation Suite for Video-LMMs.* Under Review

- **AS Jameel Hassan***, Hanan Gani*, Noor Hussein, Uzair Khattak, Muzammal Naseer, Fahad Khan, Salman Khan, *"Align Your Prompts: Test-Time Prompting with Distribution Alignment for Zero-Shot Generalization".* NeurIPS 2023

- Gihan Jayatilaka*, **AS Jameel Hassan***, Suren Sritharan* et al, *"Holistic Interpretation of Public Scenes Using Computer Vision and Temporal Graphs to Identify Social Distancing Violations".* Applied Sciences, MDPI 2021

- **AS Jameel Hassan**, Suren Sritharan, Gihan Jayatilaka et al. *"Hands Off: A Handshake Interaction Detection and Localization Model for COVID-19 Threat Control".* IEEE ICIIS 2021

- **A. S. Jameel Hassan***, Umar Marikkar*, et al. *"A Sensitivity Matrix Approach for Centralized Active Reactive Power Management of PV Systems integrated LV network".* Energies, MDPI 2020

Honours & Awards

- MBZUAI full scholarship master's student.
- Best practical impact paper in the 16th IEEE ICIIS Conference 2021.

Leadership / Extracurricular

- Computer Vision Department Student Representative, Graduate Student Council (Sep 2022 - Sep 2023).
  – Organized a bootcamp program for the Fall 2023 students, amassing an attendance of over 80 students.
- Member of Varsity Basketball team, University of Peradeniya (2018/2019)
- High School Prefect (2013/2014)

Referees

Prof. Vishal Patel,
Associate Professor, Johns Hopkins University
Maryland, United States of America.
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Prof. Salman Khan,
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