MUHAMMAD HUZAIFA

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EDUCATION

Mohamed Bin Zayed University of Artificial Intelligence (MBZUAI) — **Abu Dhabi, UAE**

Master of Science (M.Sc.) in Machine Learning, GPA - 3.73/4.00 — *Aug 2022 – May 2024*
- *Advisor:* Prof. Fahad Khan *Co-Advisor*: Prof. Salman Khan
- *Thesis title:* Resilience of Vision-Language Models on Object-to-Background Compositional Changes (link)

National University of Science and Technology (NUST) — **Islamabad, Pakistan**

Bachelor of Science (B.Sc.) in Electrical Engineering, GPA - 3.26/4.00 — *Sept 2017 – Aug 2021*
- *Advisor:* Prof. Latif Anjum *Co-Advisor:* Prof. Mansoor Asif
- *Thesis title:* Gesture to speech recognition system for specially-abled people

RESEARCH INTERESTS

- Improving representation learning in discriminative and generative multimodal models (VLMs, LMMs) for robustness under domain shifts and adversarial attacks.
- Enhancing the efficiency of multimodal models via data efficiency, training-time optimization, and parameter reduction.

PUBLICATIONS

* indicates Equal Contribution

- P Gavrikov, W Lin, M.J Mirza, S Jahagirdar, <u>Muhammad Huzaifa</u>, S Doveh, J Glass, H Kuehne **VisualOverload: Probing Visual Understanding of VLMs in Really Dense Scenes** *under review* | 📄*Paper* *Code*

- <u>Muhammad Huzaifa</u>, Y. Kementchedjhieva. **EFSA: Episodic Few-Shot Adaptation for Text-to-Image Retrieval**. *ICCV 2025 Workshop on Closing the Loop between Vision & Language* | 📄*Paper*

- <u>Muhammad Huzaifa</u>*, HS Malik*, M Naseer, S Khan, FS Khan, **ObjectCompose: Evaluating Resilience of Vision-Based Models on Object-to-Background Compositional Changes** *ACCV-2024 (Oral, Top 5.6%)* | 📄*Paper* *Code*

- R Imam, H Ghani*, <u>Muhammad Huzaifa</u>*, K Nandakumar, **Test-Time Low Rank Adaptation via Confidence Maximization for Zero-Shot Generalization** *WACV-2025* | 📄*Paper* *Code*

- <u>Muhammad Huzaifa</u>*, R Imam*, MEA Azz, **On enhancing the robustness of Vision Transformers: Defensive Diffusion** *MIUA 2023* | 📄*Paper* *Code*

- R Imam, <u>Muhammad Huzaifa</u>, N Mansour, SB Mirza, F Lamghari, **Domain Adaptable Fine-Tune Distillation Framework For Advancing Farm Surveillance** | 📄*Paper* *Code*

RESEARCH EXPERIENCE

Tübingen AI Center, University of Tübingen — **Mar 2025 – Aug 2025**

Research Assistant — *Tübingen, Germany*
- Advisor / Line Manager Prof. Hilde Kuehne. Conducted research on large vision-language models (LVLMs). Collaborated on a project currently under review at ICLR'26.

Vision and Language Lab, MBZUAI — **May 2024 – Mar 2025**

Research Associate II — *Abu Dhabi, UAE*
- Advisor / Line Manager Prof. Yova Kementchedjhieva. Proposed a few-shot adaptation strategy to address hard negatives in text-to-image retrieval for vision-language models across both open-domain and closed-domain settings (ICCV-W 2025).

Intelligent Visual Analytics Lab, MBZUAI — **Aug 2022 – May 2024**

Graduate Research Assistant — *Abu Dhabi, UAE*
- Advisor / Line Manager Prof. Fahad Khan. Proposed a novel defense against attack-agnostic adversarial attacks by leveraging the denoising capabilities of diffusion models (MIUA 2023).
- Developed a benchmark to systematically evaluate the robustness of vision-language models against object-to-background compositional changes (ACCV 2024).

Fujairah Research Center — **May 2023 – Aug 2023**

Visiting Researcher — *Fujairah, UAE*
- Proposed a two-stage framework combining automated annotation and knowledge distillation to develop a lightweight YOLOv8 model for real-time camel farm monitoring using surveillance video data.

WORK EXPERIENCE

Techlogix   Mar 2022 – Jun 2022
Application Consultant   *Lahore, Pakistan*
- Assisted in customer query resolution through a streamlined ticketing system, generated MIS reports based on business requirements, and supported the deployment and maintenance of core banking applications.

ProntoDigital   Nov 2021 – Feb 2022
Digital Data Analytics Consultant   *Lahore, Pakistan*
- Implemented website tracking using Google Analytics and Tag Manager, creating customized performance reports that enabled clients to optimize marketing strategies and drive sales growth.

TEACHING & ACADEMIC SERVICES

Teaching Assistance | *MBZ University of Artificial Intelligence (MBZUAI), Abu Dhabi*
- Deep Learning (AI702) – Spring 2024, with Prof. Haris Khan.
- Foundations of Artificial Intelligence (AI701) – Fall 2023, with Prof. Rao Anwar.
- Introduction to Machine Learning (ML701) – Fall 2023, with Prof. Samuel Horvath.

Conference Reviewing | *Reviewer*
- ECCV 2024, WACV 2025, CVPR 2025, WACV 2026.

Conference Volunteer | *EMNLP 2022, Abu Dhabi, UAE*
- Assisted with on-site logistics and coordination tasks at the EMNLP 2022 conference.

HONOURS & AWARDS

- Received an **Honorable Mention** from MBZUAI for research contributions during the master's program (link).
- ObjectCompose, my master's thesis, received the Best Student Paper Honorable Mention Award at **ACCV**   2024
- Defensive Diffusion was nominated for the **Best Paper Award** (Abstract Category) at the **MIUA**   2023
- Secured a **Fully Funded Scholarship** for graduate studies in Machine Learning at MBZUAI   2022
- Recognized as the **2ⁿᵈ Best Undergraduate Project** in Electrical Engineering at NUST   2021
- Finalist in the Crossroads Emerging Leadership Program organized by **Harvard University**   2021

SKILLS

Programming Languages: Python (Advanced), C/C++ (Basic), C# (Basic), Java (Basic)
Machine Learning Frameworks: PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, Hugging Face
Development Tools: Git, VS Code, Visual Studio, PyCharm, Linux
Languages: English (Expert), Hindi (Native), Urdu (Native)

EXTRACURRICULAR AND SOCIAL ACTIVITIES

Crossroads Emerging Leaders Program (CELP) | *Finalist, Harvard Business School*
- A Harvard-led global initiative aimed at empowering university students through academic development, mentorship, and exposure to entrepreneurial thinking. Collaborated in a diverse international team to design scalable solutions for underdeveloped economies, applying principles of social entrepreneurship learned through the program.

Walee | *Campus Ambassador*
- Led university seminars to promote platform awareness, ran social media campaigns to drive engagement and sales, and collaborated with the product team to enhance user experience through feature feedback.

REFERENCES

1. ✉ Prof. Fahad Khan (MBZUAI, Linköping University)   2. ✉ Prof. Muhammad Haris Khan (MBZUAI)
3. ✉ Prof. Salman Khan (MBZUAI, Australian National University)   4. ✉ Prof. Yova Kementchedjhieva (MBZUAI)