

Muhammad Ali

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Personal Profile

Machine Learning Specialist with expertise in segmentation architectures, zero-shot classification, and Vision-Language Model benchmarking. Skilled in applying machine learning tools to complex real-world problems, particularly in vision and language tasks. Strong ability to communicate complex ideas effectively.

Education

2021 – 2024: PhD in Machine Learning

Mohamed bin Zayed University of Artificial Intelligence, Abu Dhabi, United Arab Emirates
Full sponsorship, 3.83 GPA

Thesis: Towards Accurate recognition of objects in complex environment

Core competencies include:

- Multi-modal evaluations, benchmarking and finetuning for image understanding tasks, zero-shot image recognition, and open-vocabulary object detection
- Efficient transfer learning techniques with prompt learning for robustness and generalization of vision-language models
- Semantic segmentation of waste in cluttered environments
- Segmentation of the irregular shaped objects in cluttered environments
- Zero-shot multi-label classification and underwater detection
- Advanced skills in data-preprocessing and using various exploration and visualization tools.
- Critical awareness of the capabilities and limitations of the different forms of learning algorithms.
- Advanced abilities to analyze computational and statistical properties of advanced learning algorithms and their performance.
- Sophisticated skills in initiating, managing, and completing multiple project reports.
- Project Management, Product Management

Key subject areas:

- Research Communications
- Probabilistic and Statistical Inference
- Deep Learning
- Advanced Machine Learning
- Mathematics for Artificial Intelligence
- Machine Learning

2021: IELTS Band 7.5, British Council, Abu Dhabi, United Arab Emirates

2007 – 2009: MS in Wireless Communications LTH, Sweden

Lund University of Technology, Sweden, GPA 4.3 (Top 5% of 2009 graduating class)

Thesis: Robust Communications using MIMO in Body area Networks.

Key subject areas:

- Stochastic Stationary Processes
- Advanced Communications
- Convex Optimization
- Spread spectrum Techniques
- Digital Communications
- Wireless Communications

Experience

Sept 2021 – May 2023: MBZUAI Graduate Assistant

- Researched, teaching and administrative tasks.
- Assisted Faculty members with a range of different tasks.
- Prepared laboratory material.

- Collaborated in examination organization.

Completion of the Graduate Assistant's Training Program

- Communication/presentation skills
- Foundations of Teaching
- Measurement & evaluation
- Helped students in office hours/identifying resources

Sept 2018 – May 2019: PIAIC Intern, Pakistan

- Collaborated on several Deep learning Projects
- Supervised and unsupervised learning methods

Sept 2010 – May 2018: ACES, Pakistan

- System Level Project management across technical teams nationally and internationally for product development
- Electronics Engineer with expertise in troubleshooting and fault analysis
- Managed system-level technical aspects across multiple projects
- Collaborated with cross-functional design (local and international) teams to develop products
- Ensured quality assurance through rigorous testing and evaluation
- Implemented RCS analysis method using CST, MATLAB, Antenna Design and Modelling

Sept 2008 – May 2009: LTH, Sweden

- Engaged in Wireless Communications, primarily focusing on system design and antenna design.
- Robust Communications in BANs using MIMO

Completion of the Graduate Assistant's Training Program

- Communication/presentation skills
- Foundations of Teaching
- Measurement & evaluation
- Helped students in office hours/identifying resources

June – 2024: Facilitator in Executive Program

- Served as an AI-Facilitator in Management Executive program for ADNOC, Enec, Etihad

Projects

- Benchmarking VLLMS in cluttered and complex and degraded environment
- CosNet: A Novel Semantic Segmentation Network using enhanced boundaries in cluttered environments
- Under water object detection enhancement using channel stabilization
- Feature Amplification Networks for Waste segmentation in cluttered Environments
- Enhanced Segmentation of deformed shaped objects in complex environment
- SubOmiEmbed: Self-supervised representation learning of multi-omics data for cancer type classification
- Self-supervised Representation Learning Through Predicting Geometric Transformations

Awards and Achievements

2019 MBZUAI graduate studies scholarship holder

2018 PIAIC, Pakistan, Selected as PIAIC intern

2009 LTH, Sweden studies scholarship holder

Leadership and Extra-curricular Activities

2020 Served as a reviewer at VISAPP, BMVC

2018 Volunteered at ICIP, Conference at ABU Dhabi

2005 Lead to help earthquake affectees by providing medical care, food and others.

Skills

Python, MATLAB, C, Pytorch, Tensorflow, Detectron 2.0, MMsegmentation, Modelling on CST, VSCODE, Git Huggingface, Prompt engineering, LLM summarization, Classification , VLM Benchmarking, AI Assistants using agents.

Emotional resilience, communication, project management, product management, data analytics,

Latest Publications

Muhammad Ali, Salman Khan, Waste-Bench

A Comprehensive Benchmark for Evaluating VLLMs in Cluttered Environments, EMNLP July 2025 (Accepted)

Muhammad Ali, Salman Khan, Mubashir Numan, COSNET

A Novel Object Segmentation Network using Enhanced Boundaries in Cluttered Scenes, WACV, Oct 2024 (Accepted)

Muhammad Ali, Salman Khan, Fusion Net

A Novel Object Segmentation architecture using multimodal fusion of RGB and HIS images, IEEE Explore, IBCAST July 2025 (Accepted)

Muhammad Ali, Salman Khan, Mubashir Numan, FANET

Feature Amplification Network for Semantic Segmentation in Cluttered Background, (ICIP-2024)

Muhammad Ali, Salman Khan, CLIP Decoder

Zero Shot Multilabel Classification using Multimodal CLIP Aligned Representations March 2023 (ICCVW-2023)

Muhammad Ali, Salman Khan, Flex Pooling

Flex Pooling with Simple Auxiliary Classifiers in Deep Networks Oct 2023 (VISAPP-2023)

Muhammad Ali, Salman Khan, Under Water Object Detection

Underwater Object Detection Enhancement via Channel Stabilization Dec (DICTA-2022)

References

Dr. Salman KHAN

Primary Academic Advisor

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