

# Muhammad Gohar JAVED

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## EDUCATION

- Dec 2024 | **Master of Science in Electrical and Computer Engineering**  
Sep 2022 | University of Alberta, Canada  
▶ CGPA : 4.00 / 4.00
- Jul 2020 | **Bachelor of Electrical Engineering**  
Sep 2016 | National University of Sciences and Technology (NUST), Pakistan  
▶ CGPA : 3.84 / 4.00 Rank : top 5%

## WORK EXPERIENCE

- Dec 2024 | **Graduate Research Fellow**  
Sep 2022 | Faculty of Engineering, University of Alberta, Canada  
▶ Working with Dr. Li Cheng and Dr. Xingyu Li at Vision and Learning Lab on digital character control using novel Generative AI methods for 3d human motion and interaction synthesis.
- Aug 2024 | **Student Machine Learning Consultant**  
May 2024 | Alberta Machine Intelligence Institute (Amii), Edmonton AB, Canada  
▶ Delivered coaching sessions to CTOs/ML Leads of 4 startups, across different industries, through the Level Up program. Helped translate business needs into ML solutions, brainstorm ideas & overcome challenges.
- Aug 2023 | **Associate Machine Learning Developer**  
May 2023 | AltaML, Edmonton AB, Canada  
▶ Developed a Fleet Maintenance Prediction Proof-of-Concept (PoC) for the City of Calgary, showcasing the potential of machine learning to reduce unplanned maintenance costs and minimize operational downtime through predictive time series analysis of maintenance logs, sensor data, weather, and road conditions.
- Apr 2023 | **Machine Learning Researcher**  
May 2022 | Hotpot AI, Los Altos CA, USA (Remote)  
▶ Led enhancements for the Object Eraser, Background Removal, and Style Transfer tools, involving full ML process lifecycle to achieve state-of-the-art performance and efficient deployment.  
▶ Enhanced performance quality by 3x for Object Eraser, 5x for Background Removal and 4x for Style Transfer, advancing their competitive position in the market, resulting in increased usage and multiple B2B contracts.
- May 2022 | **Data Scientist**  
Oct 2020 | Teradata Global Consulting, Islamabad, Pakistan  
▶ **NOV United States** - Improved the performance of Bitbox, a PDC drill-bit inspection solution, leading it from PoC to Minimum Viable Product (MVP). Redesigned the cutter detection and grading algorithm, using 3d segmentation, unsupervised clustering and geometric processing, increasing its accuracy from 40% to 87%.  
▶ **Resona Bank Japan** - Developed Retail Vision as-a-Service (RVaaS), an intelligent computer vision service to analyze in-store customer behavior by extracting hidden insights from cctv video streams. Trained and deployed object detection and tracking models to identify patterns of customer activity for actionable insights.

## SKILLS

- Programming and Scripting :** Python, C, C++, Bash, Batch and MATLAB.  
**Machine Learning :** PyTorch, Tensorflow, ONNX, Scikit-learn, OpenCV and SQL.  
**2D & 3D Computer Vision :** Python, OpenCV, Open3D, Trimesh, Nvidia DeepStream and Matlab.  
**Data Analysis and Visualization :** Python, Pandas, Seaborn, Matplotlib, Plotly and SQL.  
**Software Development Tools :** Git, Github, Docker, FastAPI and Jupyter.  
**Cloud Technologies :** AWS Elastic Container Service (ECS), ECR, EC2, S3, Azure Cognitive Services and VMs.  
**Embedded Systems :** ARM, Arduino, Xilinx FPGAs and Huawei Atlas.

## PUBLICATIONS & PROJECTS

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### **InterMask : 3D Human Interaction Generation via Collaborative Masked Modelling**

M. Gohar Javed, C. Guo, L. Cheng, X. Li

[Arxiv Preprint 2024](#) - [Project Webpage](#)

A novel framework for human interaction generation using collaborative masked modeling in the discrete space, which explicitly models spatio-temporal dependencies within and between the interacting individuals.

### **MoMask : Generative Masked Modeling of 3D Human Motions**

C. Guo\*, Y. Mu\*, M. Gohar Javed\*, S. Wang, L. Cheng - *\*Equal Contribution*

[CVPR 2024](#) - [Project Webpage](#)

A novel masked modeling framework for text-driven 3D human motion generation, using hierarchical motion tokenization and masked bidirectional transformers.

### **QuantYOLO : A High-Throughput & Power-Efficient Object Detection Network for Resource Constrained UAVs**

M. Gohar Javed\*, M. Raza\*, M. M. Ghaffar, C. Weis, F. Shafait, N. Wehn - *\*Equal Contribution*

[DICTA 2021](#) - [Spotlight](#) - [Paper URL](#)

A fully-binarized single-shot object detection network with 1 bit weights, 4 bit activations, and only 9 conv layers for resource and power constraint devices in edge applications.

### **Revisiting Fuzzy Tiling Activation and how to set its Hyperparameters**

[Reinforcement Learning Course Project, UAlberta](#) - [Paper URL](#) | [Code Repo](#)

Addresses the sensitivity of Fuzzy Tiling Activation (FTA) to its tiling bounds by using scaled Tanh to limit the range of its input.

### **Measuring Racial Bias in Image Captioning Models using Counterfactuals**

[Privacy and Fairness in ML Course Project, UAlberta](#) - [Paper URL](#) | [Code Repo](#)

A method to measure racial bias in image captioning models using counterfactual images, that are changed minimally in only the sensitive attribute.

## INVITED TALKS

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2024 **Cohere Community Talks** - MoMask : Generative Masked Modeling of 3D Human Motions. ([Recording URL](#))

## HONORS AND AWARDS

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- 2023 **CVPR 2023 Student Grant** - Received a grant to attend the 2023 IEEE/CVF Conference on Computer Vision and Pattern Recognition covering conference registration, travel, and accommodation expenses.
- 2022 **UAlberta Graduate Research Fellowship** - Secured a fully funded Masters in Research position at the University of Alberta, Faculty of Engineering. CAD 19,500 / year award.
- 2021 **Teradata Spot Award** - For exceeding expectations in the completion and delivery of Vision Analytics Proof-of-Concept for Resona Bank Japan.
- 2019 **University of Tokyo Summer Internship Program (UTSIP 2019)** - Selected with a 6% acceptance rate with an award of JPY 110,000 and accommodation benefits.
- 2018-2020 **Academic Excellence Award** - Achieved a perfect GPA of 4.00/4.00 in 4 semesters out of 8.
- 2016 **International Physics Olympiad Switzerland** - Selected among the top 5 students to represent Pakistan after 3 extensive examination camps.

## CERTIFICATIONS

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- 2022 **Reinforcement Learning Specialization** - University of Alberta (Coursera)
- 2021 **AI Engineer Associate** - Microsoft Azure
- 2020 **Deep Learning Specialization** - deeplearning.ai (Coursera)
- 2020 **Advanced SQL** - Teradata
- 2020 **Machine Learning Fundamentals** - AWS