Muhammad Kamran Janjua

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Education

University of Alberta — Edmonton, Canada
Masters of Science in Computing Science, CGPA 3.80/4.00 — Sept. 2021 – Jun 2023
Supervisor Prof. Martha White
Thesis Online Predictions, RL and Water Treatment: A GVF Story

National University of Sciences and Technology (NUST) — Islamabad, Pakistan
Bachelors of Science in Computer Science, CGPA 3.71/4.00 — Sept. 2016 – Jun 2020

Publications (Google Scholar)

(*INDICATES EQUAL CONTRIBUTION)

Kamran Janjua, H. Silva, D. Niu, B. Rashidi
Unlocking Visual Tool Reasoning in Language Models via Perception Programs — Under Review

Kamran Janjua, A. Wahab, B. Rashidi
Panoptic Pairwise Distortion Graph — Under Review

Kamran Janjua, A. Ghasemabadi, Kunlin Zhang, M. Salameh, Chao Gao, Di Niu — Pre-Print
Grounding Degradations in Natural Language for All-In-One Video Restoration — WACV'26

A. Ghasemabadi*, **Kamran Janjua***, M. Salameh, Di Niu — Paper / Code / Page / Poster
Learning Truncated Causal History Model for Video Restoration — NeurIPS'24

A. Ghasemabadi, **Kamran Janjua**, M. Salameh, C. Zhou, F. Sun, Di Niu — Paper / Code
CascadedGaze: Efficiency in Global Context Extraction for Image Restoration — TMLR'24

Kamran Janjua, H. Shah, M. White, E. Miahi, M.C. Machado, A. White — Paper / Code
GVFs in the Real World: Making Predictions Online for Water Treatment — MLJ'23

Y. Hou, **Kamran Janjua**, J. Kannala, A. Solin — Paper / Code
Movement-Induced Priors for Deep Stereo — ICPR'20

S. Nawaz, **Kamran Janjua**, I. Gallo, A. Mahmood, A. Calefati, F. Shafait — Paper
Do Cross Modal Systems Leverage Semantic Relationships? — ICCV(W)'19

S. Nawaz*, **Kamran Janjua***, I. Gallo, A. Mahmood, A. Calefati — Paper / Code
Deep Latent Space Learning for Cross-Modal Mapping of Audio and Visual Signals — DICTA'19

A. Calefati*, **Kamran Janjua***, S Nawaz, I. Gallo — Paper / Code
Gitloss for Deep Face Recognition — BMVC'18

Work Experience

Edmonton Research Center (ERC), Huawei Technologies Canada Co. Ltd — Jun 2023 – Present
Machine Learning Researcher

- I conduct research on multimodal learning, with a focus on video understanding. This also includes studying how vision language models can aid towards this goal and/or serve as useful knowledge priors.
- Additionally, I also study methods that learn online from streaming video data.

Reinforcement Learning and Artificial Intelligence Lab (RLAI) — Sept 2021 – Jun 2023
Graduate Research Assistant — Advisor Prof. Martha White

- I worked on designing temporal difference learning algorithms (TD) to make online and continual anticipatory predictions in high-volume and non-stationary systems.
- I also studied offline-to-online RL where the goal was to jump-start online RL agents by learning policies offline.

Qatar Computing Research Institute (QCRI) — Jan 2021 – Aug 2021
Research Intern — Advisor Prof. Hassan Sajjad

- I worked on understanding how neurons in a deep neural network (either individually or compositionally) work towards reaching a decision from input to the output.

- The work focused on analyzing how a trained architecture's internal state can be explained by mapping it to high-level concepts instead of relying on feature attribution methods.

Machine Learning Research Group, Aalto University Jun 2019 – Nov 2019
Visiting Research Intern Advisor Prof. Arno Solin

- I worked on depth estimation from unstructured multi-view image pose pairs. The task was to utilize cheap hardware on mobile devices and estimate depth following a stereo setup. We re-formulated the problem as a non-parametric learning task by introducing a temporal movement-induced Gaussian process prior for inter-frame reasoning. Our proposed gyroscope-driven kernel utilized low-quality MEMS sensors, and lifted the requirement of having full camera poses.

Applied Recognition Technology Laboratory, University of Insubria Mar 2018 – Sept 2018
Visiting Research Intern Advisor Prof. Ignazio Gallo

- I worked on multi-modal representation learning, mainly focusing on learning to project multiple modalities (images, audio, text) onto a shared latent space without utilizing multiple neural networks. I also explored the role of semantic relationships in the shared latent space for retrieval and verification tasks.

Teaching Experience

CMPUT 267 - Machine Learning I Fall 2021, Winter 2022
University of Alberta, Edmonton, Canada

Introduction to Machine Learning Winter 2020
National University of Sciences and Technology (NUST), Islamabad, Pakistan

Data Structures and Algorithms Fall 2018
National University of Sciences and Technology (NUST), Islamabad, Pakistan

Awards & Accolades

Graduate Research Scholarship, University of Alberta 2021-2023
Fully-funded scholarship for graduate studies (MSc. thesis). **Value: 25,197/yr CAD**

UEAwards 2020, CAMP@TUM, Munich, Germany Summer 2020
Undergraduate Excellence Award (UEAwards) is awarded to top 5 undergraduate students. **Value: 5900 CAD**

UG Star Researcher 2020, NUST, Pakistan 2020
UGStar Researcher competition across the EECS school. I won the competition and the title. **Value: 150 CAD**

Aalto Science Institute Summer Internship, Espoo, Finland Summer 2019
I was awarded the research internship in ML group at Aalto University. **Value: 8900 CAD**

Research Competition, Ulster University, UK 2019
All Pakistan research poster competition. I won third prize. **Value: 550 CAD**

Dean's List for High Achievers 2016–2020
All semesters during undergraduate studies. **Value: 550 CAD**

Invited Talk(s)

Learning to Process Streaming Videos Online with Histories — Multimodal Weekly @ TwelveLabs, April 2025

Review Experience

ICML 2025, ICLR 2025, AAAI PC Member 2025/2026, NeurIPS 2024/2025, CVPR 2024/2025

References

Prof. Di Niu — Professor, University of Alberta, Edmonton, Canada — dniu@ualberta.ca

Prof. Mohammad Salameh — Assistant Teaching Professor, Carnegie Mellon University — msalameh@andrew.cmu.edu

Prof. Hassan Sajjad — Associate Professor, Dalhousie University, Halifax, Canada — hsajjad@dal.ca