Tajamul Ashraf

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RESEARCH INTERESTS

My research lies at the intersection of model generalization, multi-modal learning, learning from limited data (zero and few-shot learning), and continual life-long learning systems for computer vision problems. These tasks enable agents to better understand the real world for improved perception and reasoning tasks.

EDUCATION

Indian Institute of Technology, (IIT Delhi) — New Delhi, India

Master of Science (M.S. by Research) in Computer Science — June 2024

GPA: 9.28/10.0 Department Rank: 1st

Advisor: Prof. Chetan Arora, Co-Advisor: Prof. (Dr.) Krithika Rangarajan

Thesis title: *Domain Adaptation in Breast Cancer Detection from Mammograms.*

National Institute of Technology, (NIT Srinagar) — Srinagar, Kashmir

Bachelors of Technology in Information Technology — July 2022

GPA: 8.34/10.0 Top 10% of the cohort

Advisor: Prof. Janibul Bashir

Thesis title: *Robust DL Models for Analyzing the Impact of Coherent Climatic Factors.*

RESEARCH EXPERIENCE

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

Research Associate II — Jan 2025 - Current

Line Manager(s): Prof. Salman Khan and Prof. Fahad Khan.

- Working on **multimodal reasoning** in LLM agents, including post-training techniques for vision-language alignment, and reinforcement learning based agent interaction with multimodal LLMs.

Microsoft Research (MSR) — Bangalore, INDIA

Research Intern — July 2024 - Dec 2024

Host Advisor(s): Dr. Mohit Jain and Dr. Prachi Jain.

- Worked on Knowledge Graph-based Information Retrieval with RAG.
- Automated LLM pipelines with a semi-structured knowledge base (SKB) for medical chatbots.
- Introduced **Cataract-MSICS** dataset and proposed a phase-conditioned method with pseudo-labeling for surgical tool segmentation.

AI & Robotics Technology Park, I-Hub (ARTPARK) Bangalore, INDIA

Visiting Student Dec 2021 - May 2022

Advisor: Prof. Raghu Krishnapuram.

- Developed an automated washroom cleaning robot Robojanitor.
- Designed robust models for pose estimation, detection, classification, and SLAM.
- Developed 3D pose models and REST APIs for production.

Indian Institute of Science (IISc) Bangalore, INDIA

Research Intern Mar 2021 - Sep 2021

Advisor(s): Prof. S.N. Omkar and Prof. Balaji Prabu.

- Developed a novel human pose comparison model to assist yoga teachers during online classes.
- Utilized BlazePose to accurately mark key points of both teachers and students during live sessions.
- Designed a feedback mechanism to compare poses and provide real-time corrections to students.

WORK EXPERIENCE

LEENA AI Remote(WFH), USA

Software Developer I May 2022 - Oct 2022

Line Manager: Anand Prajapati

- Executed full stack software development for the Product and ML team.
- Worked on cross-functional projects, architecting solutions to meet client requirements.

BSNL ALTTC Delhi, INDIA

Cybersecurity Trainee Jan 2019 - Mar 2019

Line Manager: R.K. Pandit

- Troubleshooted and resolved network issues related to Wi-Fi, bluetooth.
- Implemented security measures and optimized network performance in wireless environments.

PUBLICATIONS

(* indicates equal contribution, † indicates my role as mentor)

C9 *TITAN: Query-Token based Domain Adaptive Adversarial Learning.* Code Paper

Tajamul Ashraf, Janibul Bashir

International Conference on Computer Vision (ICCV 2025).

A5 *Agent–X: Evaluating Deep Multimodal Reasoning in Vision-Centric Agentic Tasks.*
Code Paper Data

Tajamul Ashraf, Amal Saqib, Hanan Ghani, Muhra AlMahri, Yuhao Li, Noor Ahsan, Umair Nawaz, Jean Lahoud, Hisham Cholakkal, Mubarak Shah, Philip Torr, Fahad Shahbaz Khan, Rao Muhammad Anwer, Salman Khan

Under Review (arXiv 2025).

A4 *ATR-Bench: Awesome-Domain-Adaptation-and-Federated-Learning.* Code Paper.

Tajamul Ashraf, Mohammed Mohsen Peerzada, Moloud Abdar, Yutong Xie, Yuyin Zhou, Xiaofeng Liu, Iqra Altaf Gillani, Janibul Bashir

Under Review (arXiv 2025).

A3 *Context Aware Grounded Teacher for Source Free Object Detection.* Code Paper.
Tajamul Ashraf†, Rajes Manna*, Partha Sarathi Purkayastha*, Tavaheed Tariq, and Janibul Bashir.

Under Review (arXiv 2025). Ranked 1st on Cityscapes benchmark (Papers with Code)

A2 *LLM Post-Training: A Deep Dive into Reasoning Large Language Models.* Code Paper.
Komal Kumar*, **Tajamul Ashraf***, Omkar Thawakar, Rao Muhammad Anwer, Hisham Cholakkal, Mubarak Shah, Ming-Hsuan Yang, Phillip HS Torr, Fahad Shahbaz Khan, Salman Khan
Under Review (arXiv 2025).

C8 *Phase-Informed Tool Segmentation for Manual Small-Incision Cataract Surgery.* Paper.
Bhuvan Sachdeva, Naren Akash, **Tajamul Ashraf**, Simon Mueller, Thomas Schultz, Maximilian WM Wintergerst, Niharika Singri Prasad, Kaushik Murali, Mohit Jain
Medical Image Computing and Computer Assisted Intervention (MICCAI 2025).

C7 *Enhancing Climate Change Understanding: A Novel Deep Learning Framework with the Climate Change Parameter Model.* Paper.
Tajamul Ashraf, Janibul Bashir
International Conference on Modeling, Simulation & Intelligent Computing (MoSICom 2024).

A1 *FATE: Focal-modulated Attention Encoder for Temperature Prediction.* Code Paper.
Tajamul Ashraf, Janibul Bashir
Under Review (arXiv 2024).

C6 *D-MASTER: Mask Annealed Transformer for Unsupervised Domain Adaptation in Breast Cancer Detection from Mammograms.* Code Paper.
Tajamul Ashraf, Krithika Rangarajan, Mohit Gambhir, Richa Gauba, Chetan Arora
Medical Image Computing and Computer Assisted Intervention (MICCAI 2024).

C5 *HF-Fed: Hierarchical based customized Federated Learning Framework for X-Ray Imaging.* Code Paper.
Tajamul Ashraf, Tisha Madame
MICCAI Workshop 2024 (Deep-Brea3th: Deep Breast Workshop on AI and Imaging for Diagnostic and Treatment Challenges in Breast Care). Best Student Paper Award!

C4 *TransFed: A way to epitomize Focal Modulation using Transformer-based Federated Learning.* Code Paper.
Tajamul Ashraf, Fuzayil Mir, Iqra Altaf Gillani
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV 2024).

C3 *PoseWatch: Advancing Real-Time Human Pose Tracking and Juxtaposition with Deep Learning.* Paper.
Tajamul Ashraf, BV Balaji Prabu, OS Jois Narasipura
Computer Vision and Image Processing (CVIP 2023).

C2 *Climate Change Parameter Dataset (CCPD): A Benchmark Dataset for Climate Change Parameters in Jammu and Kashmir.* Paper.

Tajamul Ashraf, Janibul Bashir

International Conference on Data Science and Applications (ICDSA 2023).

C1 *An integral computer vision system for apple detection, classification, and semantic segmentation.* Code Paper.

Tajamul Ashraf, Nair Abbas, Mohammad Haseeb, Nadeem Yousuf, Janibul Bashir

International Conference on Machine Vision (ICMV 2022).

TEACHING and ACADEMIC SERVICES

Teaching Assistant | Indian Institute of Technology, Delhi

- Computer Vision (COL780) | Spring 2024 with Prof. Chetan Arora
- Computer Vision for Robotics (JRL780) | Spring 2024 with Prof. Chetan Arora
- Computer Science Fundamentals and Programming (COL100) | Fall 2023 with Prof. Chetan Arora and Prof. Vireshwar Kumar
- Special Topics in Machine Learning (COL870) | Spring 2023 with Prof. Anurag Mittal
- Data Structures and Algorithms (COL106) | Fall 2022 with Prof. Naveen Garg and Prof. Ashish Chiplunkar

Conference/Journal Activities | Reviewer

- ACM MM'25 | MICCAI'25, 24 | WACV'25, 24 | CVIP'23, 22 | HPEC'23
- IEEE Transactions on Artificial Intelligence
- IEEE Transactions on Parallel and Distributed Systems

Conference Volunteer | Organizer

- Serving as a program volunteer for CVIP conference in IIT Jammu, INDIA

Invited Talk | Speaker

- Presented two talks on Research directions, Placements, and Internships to undergrad IT students at the National Institute of Technology Srinagar.

Pilot Mentorship Program | Mentor

I actively mentor undergraduate students from the graduating batches. I guide them on their final year thesis and independent projects in pursuing potential research publications.

Students (* denotes current)

3. Suhaib Salmani* | NIT Srinagar | 2025
   Thesis: Foundational Models and Masked Learning for efficient Medical Object Detection.
2. Rajes Manna* | NIT Srinagar | 2025
   Thesis: Source Free Domain Adaptation using Adversarial Class Aware Teacher.
1. Asrar ul Haq | NIT Srinagar | 2024
   Thesis: Transformer-Based Unsupervised Domain Adaptation in a Federated Setup.

HONORS and AWARDS

- Secured 2nd place (AED 500 award) in the MBZUAI Department Logo Design Competition.
- Awarded $500 compute grant from alphaXiv for my contributions in LLM research.
- Nominated as Diversity Intern by Microsoft Canada.
- Honorable mention by IIT Delhi for research contributions during my Master's degree.
- Awarded MICCAI 2024 Travel Grant.
- Awarded IIT Delhi Endowment Grant 2024.
- Won India's largest National Entrepreneurship Challenge at IIT Bombay.
- Gold Microsoft Student Learn Ambassador for NIT Srinagar.

TECHNICAL SKILLS

Languages: Python, C, C++, MATLAB, SQL, HTML/CSS, Javascript
Frameworks: PyTorch, TensorFlow, Keras, Scikit-Learn, OpenCV, HuggingFace, Flask
Developer Tools: Git, Docker, VS Code, Visual Studio, PyCharm, Linux

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EXTRACURRICULAR and SOCIAL ACTIVITIES

Gold Microsoft Student Learn Ambassador
Actively promoted technology learning and fostered a community of student developers in Kashmir. Organized workshops, webinars, and hackathons to encourage student innovation and collaboration.

Founder Ralith Milth
Established an NGO focused on raising awareness and support for drug abuse prevention and rehabilitation. Spearheaded community outreach programs with local organizations to support affected individuals.

Co-founder AT Talks
Hosting a podcast discussing the intersection of technology and society, featuring expert insights. Managed guest interviews, content strategy, and promotion to grow the podcast's reach and impact.

REFERENCES

Prof. Salman Khan ✉
Prof. Chetan Arora ✉
Prof. Iqra Altaf Gillani ✉
Prof. Rao Anwer ✉
Prof. Krithika Rangarajan ✉
Prof. Janibul Bashir ✉