Javed Ahmad

Research Interests:
- **Core Areas:** 3D Computer Vision, Deep Learning, Multimodal 3D Scene Perception
- **Robotics:** Motion Planning and Manipulators
- **3D:** SfM, NeRF, Gaussian Splatting and SLAM systems

Experiences

02/2025 – present **PostDoc**
Research Lab: VICARIOS, Advanced Robotics, IIT, Italy
- Working on immersive remote tele-operation of robots
- Developing a novel Gaussian Splatting based SLAM system

02/2024 – 01/2025 **PostDoc**
Research Lab: Center for Cultural Heritage Technology, IIT, Italy
- Collaborated with CTE-Genova for 3D artifact reconstruction via robotic manipulators
- Developed synchronized motion planning for UR5e and UR3e robots to scan artifacts with Artec 3D scanner and manipulate artifacts tray.
- Developed an algorithms for precise pose tracking of complex shaped artifacts

11/2020 – 12/2023 **Doctoral Researcher**
Research Lab: Pattern Analysis and Computer Vision (PAVIS), IIT, Italy
- Developed novel LiDAR-Camera fusion scheme, improving accuracy and reliable 3D perception
- Contributed to 3D object localization for MEMEX Project from crowd-sourced images
- Performed LiDAR-Camera calibration procedures

07/2017 – 10/2020 **Research Assistant**
Research Lab: CACTUS, ITU, Pakistan
- Worked on SfM 3D reconstruction
- Worked on vibration signal processing via machine learning for fault diagnosis in rotating machinery

2017 – 2019 **Teaching Assistant**
University: Information Technology University (ITU), Pakistan
- **Graduate Course:** Machine Learning
- **Undergrad Courses:** Calculus & Analytical Geometry, Power System Analysis

Education

11/2020 –12/2023 **Ph.D in Computational Vision, Automatic Recognition and Learning**
Thesis Title: Multimodal 3D Scene Perception
Research Lab: Pattern Analysis and Computer Vision (PAVIS), IIT, Italy
University: University of Genoa (UniGe), Italy

2017 – 2019 **Master of Science in Electrical Engineering**
University: Information Technology University (ITU), Pakistan
Major Subjects: Advanced Mathematics, Machine Learning, Control System Theory, Digital Signal Processing

2013 – 2017	**Bachelor of Science in Electrical Engineering** **University:** University of Central Punjab, Pakistan **Major Subjects:** Signal Processing, Image Processing, Control Systems, Electronics

Programming and Skills

Python:	Expert (Pytorch, Numpy, Pandas, Scipy)
Computer Vision:	Expert (OpenCV, Open3D, Meshcat, Viser, Nerfstudio, BPY, Torchvision, MMCV)
Robotics:	Experienced (ROS2, Pinocchio, Pyroboplan, UR-RTDE)
Manipulators:	Experienced (UR5e, UR3e)
3D Perception:	Advanced (mmdetection3D, LiDAR-Camera Fusion Techniques)
Par. Computation:	Experienced (Franklin-HPC: NVIDIA Tesla V100, A100)
Others:	Knowledgeable (Blender, C++, MATLAB)
Practicing:	NVIDIA Omniverse & Isacc Sim , Moveit2

Publications

Submitted	**Ahmad J.**, et al. DARS: A Dual-Arm Robotic System for Autonomous 3D Scanning of Artefacts. IROS-2025
2024	**Ahmad, J.**, Frascella, S., Dassiè, F., et al. Automated Artifacts Position and Orientation Estimation in Cultural Heritage. IEEE/ASME Conference on Mechatronic, Embedded Systems and Applications. [Teaser] [Presentation] [IEEEXplore DOI]
2023	**Ahmad, J.**, Del Bue, A. mmFUSION: Multi-modal Fusion for 3D Object Detection. [arxiv link] [Presentation]
2022	**Ahmad, J.**, Toso, M., Taiana, M., James, S., Del Bue, A. Multi-view 3D Objects Localization from Street-level Scenes. International Conference on Image Analysis and Processings. [Springer DOI] [GitHub code] [Presentation]
2022	Castro, E., ..., Ahmad, J., et al. Fill in the Blank for Fashion Complementary Outfit Product Retrieval. Journal of Machine Vision and Applications. [Springer DOI]
2020	**Ahmad, J.**, Shamshad F., et al. Deep Unsupervised Deblurring Approach for Improving Crops Disease Classification. Poster at CVPR Workshop on Agriculture-Vision.

Reviewer

IEEE RA-L, ICRA-2025, IROS-2025

Summer Schools

Jul 2023	**International Computer Vision Summer School (ICVSS), Sicily** School Theme: From Perception to Action My Poster: 3D Scene Perception from Single to Multi-modalities [Poster link]
Jul 2022	**Vision and Sports Summer School (VS3), Prague** School focused on advanced computer vision techniques in 2D and 3D object recognition, multi-modal learning, 3D neural rendering.
Jul 2021	**Vision Understanding and Machine Intelligence Summer School (VISUM), Porto** **Winner** of project competition on fashion product retrieval using deep learning. [Presentation link]
Jul 2020	**Eastern European Machine Learning Summer School (EEML)** **Winner** of 3D historic landmark reconstruction proposal in unconference research competition. [Presentation link]

Awards & Prizes

1st prize in VISUM 2021 and EEML 2020 competitions

MS Fellowship granted by ITU, Pakistan

Community Service

Former member of Akhuwat Foundation, Pakistan, involved in charity fundraising. Currently exploring more community engagement opportunities.