Dadan Khan

ABOUT ME

PhD researcher in Computer Science (Computer Vision & Machine Learning) at the University of Genova, working on generative models, diffusion-based visual synthesis, and synthetic data for visual learning. My research focuses on controllable visual generation, scene-aware synthesis, and synthetic-to-real learning, with an emphasis on how generated data can support robust and data-efficient computer vision under distribution shift. I have also worked on medical image analysis, including annotation scarcity, domain variability, and generalization challenges in clinical imaging. My experience includes latent diffusion, ControlNet, vision foundation models, and multimodal representations, including CLIP, DINO, and SAM. My broader research interests include generative modelling, representation learning, robust and trustworthy visual AI, and human-centric vision.

EDUCATION AND TRAINING

PhD

University of Genova [01/11/2022 – 31/10/2026]

City: Genoa | **Country:** Italy | **Field(s) of study:** Computer Science (Computer Vision & Machine Learning) | **Thesis:** Attentive: Unlocking the Potential of Synthetic Data for Video Surveillance and Scene Understanding

- Supervisor: Prof. Francesca Odone

Master of Engineering

University of Electronic Science and Technology of China, China [01/09/2016 – 20/06/2018]

City: Chengdu | **Country:** China | **Field(s) of study:** Computer Science Engineering | **Thesis:** 220 KV Power Switch Detection & State Recognition

Bachelor of Engineering (BE)

Mehran University of Engineering & Technology [10/11/2011 – 31/12/2014]

City: Jamshoro | **Country:** Pakistan | **Field(s) of study:** Computer Systems Engineering

PUBLICATIONS

[2026]

P4: Place with Purpose – Pose and Prompt-Guided Human Synthesis in Real Scenes.

- [First Author]

Authors: Khan, D., Zohaib, M., Timofte, R., & Odone, F. | **Journal Name**: In Proceedings of the International Conference on Pattern Recognition (ICPR 2026).

[2025]

Diffusion-Detect: Synthetic and Real Data Towards a Robust Fire and Smoke Detection.

- [First Author]

Authors: Khan, D., Motta, J., & Odone, F. | **Journal Name**: In Proceedings of the International Conference on Image Analysis and Processing (ICIAP 2025)

[2026]

A Systematic Review of Deep Learning Approaches for Hepatopancreatic Tumor Segmentation. .

- [Equal contribution]

Authors: Hussain, R., Mohsin, M., Khan, D., & Zohaib, M. | **Journal Name**: Journal of Imaging

[2023]

A Unified Learning Approach for Malicious Domain Name Detection.

- [Co-Author]

Authors: Wagan, A. A., Li, Q., Zaland, Z., Marjan, S., Bozdar, D. K., Hussain, A., Mirza, A. M., & Baryalai, M. | **Journal Name**: Journal of Axioms

WORK EXPERIENCE

Computer Vision Lab (CVL),Julius-Maximilians-Universität Würzburg – Würzburg, Germany

Visiting Researcher

[15/03/2025 – 15/10/2025]

- Supervised by: Prof. Radu Timofte
-Investigated synthetic-to-real transfer and visual robustness under distribution shift, developing computer-vision pipelines and evaluation protocols in collaboration with the Computer Vision Lab.

AiTek S.p.A – Genova, Italy

Computer Vision & AI Engineer

[01/01/2023 – 31/12/2023]

- Developed and deployed computer-vision/AI solutions for real-world safety applications, across model development, evaluation, and deployment — client-facing engineering experience alongside doctoral research.

BUITEMS – Quetta, Pakistan

Lecturer, Computer Science & AI

[01/01/2019 – 09/2022]

- Designed and delivered undergraduate courses in Computer Science, Python programming, and Computer Vision, and supervised student ML/AI projects.

University of Genova – Genova, Italy

Teaching Assistant, Computational Vision (Master Course)

[01/03/2026 – 31/05/2026]

- Led practical laboratory sessions for the Master's-level Computational Vision course, supported assignments, projects, and assessments.

SKILLS

Programming

Python / PyTorch / pandas / NumPy / MATLAB / Docker / Git/GitHub / HPC / LaTeX

Generative models & deep learning

diffusion models / latent diffusion, / ControlNet / self-supervised & transfer learning

Computer vision

object detection / semantic/instance segmentation / human pose estimation / scene understanding / human-centric vision / domain adaptation

Representation & foundation models

CLIP / DINO/DINOv2/3 / GroundingDINO / SAM/SAM2

Machine learning

synthetic-to-real transfer / self-supervised learning / fine-tuning / distribution-shift analysis / representation learning

Research & evaluation

benchmarking / quantitative evaluation / ablation studies / perceptual/semantic evaluation / dataset preparation and annotation

RESEARCH EXPERIENCE

[2026]
PhD Research — Controllable Human Synthesis & Scene Understanding

- Developed diffusion-based methods for pose- and prompt-guided human image synthesis in real scenes, using structural pose conditioning and scene-aware placement.
- Investigated controllable generation of human appearance and pose while preserving consistency with the surrounding scene.
- Evaluated generated images using perceptual, semantic and pose-based metrics, together with human evaluation.

[2025]
PhD Research — Synthetic Data & Domain Adaptation

- Developed a synthetic data pipeline for generating realistic fire and smoke events within real scenes using diffusion-based image synthesis.
- Investigated whether generated visual data could improve object detection under synthetic-to-real distribution shift.

[2026]
PhD Research — Human Pose Prediction & Human–Scene Interaction (ongoing)

- Developing methods for scene-aware human pose prediction and human–scene interaction.

GRANTS, AWARDS & PROFESSIONAL SERVICE

[2022 – 2026]
Doctoral Scholarship, University of Genova

Competitively awarded PhD funding in collaboration with Aitek S.p.A.

[2016 – 2018]
Master Scholarship, University of Electronic Science and Technology of China, China

Competitively awarded Chinese University Scholarship

Peer reviewer, AAAI Conference on Artificial Intelligence.

Review Conference Papers

Co-organizer

Seminar series and PhD reading group, Machine Learning Genoa Center (MaLGa), University of Genova.

CONFERENCES AND SEMINARS

[2026] Lyon, France
Attended ICPR Confernce

[2025] Rome, Italy
Attended ICIAP Conference

[2024] Porto - Maia, Portugal
DeepLearn International Summer School

[2023] Padova, Italy
VISMAC Summer School Summer school on computer vision and pattern recognition.

REFERENCES

Prof. Francesca Odone

Full Professor, University of Genova — francesca.odone@unige.it

Prof. Radu Timofte

Full Professor, CVL, University of Würzburg — radu.timofte@uni-wuerzburg.de