Fatemah Alhamdoosh

PhD Researcher in Computer Vision and Multimodal Machine Learning

Florence, Italy | fatemah.alhamdoosh@unifi.it | fatemah-alh | fatemah-alhamdoosh | 351 071 1263

Professional Summary

PhD researcher specialising in computer vision, self-supervised and multimodal representation learning.

First author of two research papers; developed a multimodal egocentric vision–IMU benchmark.

Leading research on human movement foundation models and AI activities in an international clinical collaboration.

Professional Experience

University of Florence — MICC, PhD Researcher — Florence, Italy
Researching video understanding, self-supervised learning and multimodal representations for human movement analysis and healthcare. — Nov 2023 – present

University of Edinburgh — School of Informatics, Visiting PhD Researcher — Edinburgh, UK
Developed an egocentric video and IMU benchmark and evaluated deep learning methods for activity recognition and motor impairment assessment. — Mar 2025 – Feb 2026

Agenzia Regionale di Sanità della Toscana (ARS), Research Fellow — Tuscany, Italy
Designed and developed a management system automating event administration and certificate generation. — Jan 2021 – Jan 2022

Education

PhD **University of Florence**, Smart Computing — Nov 2023 – Oct 2027
Expected Oct 2027. Provisional thesis: Towards Domain-Invariant, Motion-Centric Multimodal Learning for Clinical Motor Impairment Assessment.

MSc **University of Florence**, Computer Engineering — Jan 2019 – Jan 2023
110/110. Thesis: Pain Index Estimation from Facial Landmark Analysis with Graph Neural Networks.

BSc **University of Florence**, Computer Engineering — Jan 2016 – Jan 2019
101/110. Thesis: Optimisation of Multi-View Detectors for High-Resolution Video.

Teaching Experience

Tamkeen (Remote), Machine Learning Instructor — Dec 2025 – present
Designing and delivering machine learning and deep learning courses, including lectures and practical materials.

University of Edinburgh, Academic Tutor & Course Marker — Oct 2025 – Dec 2025
Tutored Accelerated Natural Language Processing (ANLP) and marked Machine Learning Practice (MLP).

Selected Publications

EgoInertia-MI: A Multimodal Egocentric Vision and IMU Benchmark for Motor Impairment Assessment — Jan 2026
Fatemah Alhamdoosh, Pietro Pala, Abduallah Mohamed, D. K. Arvind
arxiv.org/abs/2607.03934 (arXiv preprint, arXiv:2607.03934)

Pain Level Estimation From Videos by Analyzing the Dynamics of Facial Landmarks With a Spatio-Temporal Graph Neural Network — Jan 2025
Fatemah Alhamdoosh, Pietro Pala, Stefano Berretti
10.1109/TBIOM.2025.3592836 (IEEE Transactions on Biometrics, Behavior, and Identity Science, 7, 610–619)

Ongoing Research Projects

MotorFM
Leading University of Florence research on generalisable multimodal foundation models for human movement understanding and motor impairment assessment.

MUNDI
Leading AI research activities in an international clinical collaboration focused on multimodal neurodegenerative disease assessment, study design and data collection planning.

Completed Research Projects

EgoInertia-MI
Designed a multimodal egocentric video–IMU dataset and benchmark for assessment of simulated motor impairment.

Video-Based Pain Estimation
Developed a spatio-temporal graph neural network for pain estimation using facial landmark dynamics.

Technical Skills

Programming & Frameworks: Python, PyTorch, PyTorch Lightning, NumPy, Pandas, Scikit-learn, OpenCV, Git, Linux

ML Research: Video Understanding, ViTs, Video Transformers, GNNs, Pose Estimation, Temporal Modelling, SSL, Foundation Models, Multimodal Learning, Domain Generalisation

Research Engineering: Distributed GPU Training (DDP), CUDA, Fine-Tuning, LoRA, Dataset Development, Sensor Synchronisation, Experimental Evaluation, HPC, Weights & Biases / MLflow

Personal Interests

Plant care: Growing and caring for 10+ plants, with blooms throughout the year.

Handcrafts: Embroidery and handmade projects.

Volunteering: Scout leadership and activities with children.

Social causes: Freedom of expression and women's and children's rights.

Languages & Certifications

Arabic (Native), Italian (Native), English (Professional).

Good Clinical Practice (GCP) certification.