Guido Maria D'Amely di Melendugno

Email address:

● WORK EXPERIENCE

01/02/2025 - CURRENT - ROME, ITALY

RESEARCH FELLOW SAPIENZA UNIVERSITÀ DI ROMA - DEPARTMENT OF COMPUTER SCIENCE

- Researcher and Principal Investigator for the research project "*Enhancing Procedural Mistake Detection: Towards real-time and Context-Aware Systems*"The project aims at developing methods for automatic procedural mistake detection.
- Collaboration with "PINlab" research group.

Email: | **Website:** https://www.pinlab.org/

01/04/2025 - 31/01/2026 - ROMA, ITALY

LECTURER UNITELMA SAPIENZA - MASTER AMDP

- Responsible for the "ML and Big Data" course within the Master's program in Data and Process Analysis and Modeling.
- Produced all instructional design materials and recorded video lectures for the university's digital platform.
- Expertise shared**:** Machine Learning algorithms (Python), Big Data frameworks, and predictive modeling.

01/05/2021 - CURRENT - ROME, ITALY

TUTOR SAPIENZA UNIVERSITY OF ROME - DEPARTMENT OF DATA SCIENCE

- Drafted and graded practical assignments and exercises for the "Fundamentals of Data Science" course.
- Provided academic support and mentorship to students during dedicated office hours to clarify core curriculum concepts.
- Co-supervised undergraduate and graduate theses, providing technical guidance on advanced research topics, including:
  - *HyperHi5 a novel dataset for hyperbolic Image-Text hierarchical alignment (2025).*
  - *Task graphs in procedural egocentric videos: a novel approach for mistake detection* (2024).
  - *Hyperbolic Self-Paced Learning for Image Classification* (2023).

01/01/2012 - 31/12/2020 - ROME, ITALY

PRIVATE TUTOR PRIVATE CLIENTS

- Provided tailored educational support in STEM subjects, including Mathematics, Physics, and Computer Science, for students across all academic levels.
- Facilitated university exam preparation for complex technical subjects such as Probability, Statistics, Linear Algebra, Geometry, and Chemistry.
- Developed customized learning plans to help students from diverse backgrounds (Economics, Statistics, Engineering) master foundational and advanced quantitative concepts.

● PROJECTS

01/02/2025 - CURRENT

Enhancing Procedural Mistake Detection: Towards Real-Time and Context-Aware Systems Involved in the research and development of innovative Computer Vision approaches focused on Procedural Mistake Detection, specifically aimed at identifying anomalies or errors in videos of human-led procedures. The project

leveraged state-of-the-art Vision-Language Models (VLMs) and Large Language Models (LLMs) to advance the detection and analysis of procedural inconsistencies.

01/05/2021 - 30/04/2024

FAshIon REplatforming hub - FAIRE Contributed to an EU-sponsored research project aimed at accelerating the digital transformation of fashion and design companies through AI and Big Data to strengthen the "Made in Italy" supply chain. Working within a collaborative team of Sapienza University researchers and industry partners (DSTech s.r.l. and LiveTech s.r.l.), I participated in the development of work packages focused on Demand Forecasting & Replenishment, as well as Catalogue Detection, Visual Search, and Recommendation systems.

EDUCATION & TRAINING

01/05/2021 - 30/04/2024 - ROME, ITALY

PH.D. IN COMPUTER SCIENCE- SAPIENZA UNIVERSITY OF ROME

Field(s) of study: Computer Science | **Level in EQF:** 8 | **Thesis:** Predictive perception for detecting human motion anomalies and procedural mistakes

01/01/2016 - 31/01/2020 - ROME, ITALY

MASTER DEGREE IN MATHEMATICS- SAPIENZA UNIVERSITY OF ROME

Final grade: 106/110 | **Level in EQF:** 7 | **Thesis:** Un Approccio basato sul Learning per il problema del Double Dummy Solver

01/09/2009 - 31/10/2013 - ROME, ITALY

BACHELOR DEGREE IN MATHEMATICS- SAPIENZA UNIVERSITY OF ROME

Level in EQF: 6 | **Thesis:** Metriche Discontinue A 2 Fasi E Casi Degeneri

PUBLICATIONS

TI-PREGO: Chain of Thought, In-Context Learning for OMD in PRocedural EGOcentric Videos 2025
L. Plini, L. Scofano, E. De Matteis, G.M. D'Amely,A. Flaborea,G.M. Farinella,F. Galasso, A. Furnari Computer Vision and Image Understanding

Compositional Entailment Learning for Hyperbolic Vision-Language Models 2025
A. Pal, M. van Spengler, G.M. D'Amely di Melendugno, A. Flaborea, F. Galasso, and P. Mettes The Thirteenth International Conference on Learning Representations (ICLR)

Leveraging Time-Series Foundational Model for Student Dropout Prediction: A Comparative Study 2025
N. Ciucci Colli, G.M. D'Amely di Melendugno, S. Faralli, D. Distante. Proceedings of the 2025 7th International Workshop on Artificial Intelligence and Education (WAIE)

ANTHROPOS-V: Benchmarking the Novel Task of Crowd Volume Estimation 2025
L. Collorone, S. D'arrigo, M. Pappa, G.M. D'amely di Melendugno, G. Ficarra, F. Galasso Proceedings of the Winter Conference on Applications of Computer Vision (WACV)

Hyp2Nav: Hyperbolic Planning and Curiosity for Crowd Navigation 2024
G. M. D'Amely di Melendugno, A. Flaborea, P. Mettes, F. Galasso 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

Contracting skeletal kinematics for human-related video anomaly detection 2024
A. Flaborea, G.M. D'Amely di Melendugno, S. D'Arrigo, M. Sterpa, A. Sampieri, F. Galasso Pattern Recognition

PREGO: Online Mistake Detection in PRocedural EGOcentric Videos 2024
A. Flaborea, G.M. D'Amely, L. Plini, L. Scofano, E. De Matteis,A. Furnari,G.M. Farinella,F. Galasso Proceedings of

the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)

[Multimodal Motion Conditioned Diffusion Model for Skeleton- based Video Anomaly Detection](#) 2023
A. Flaborea, L. Collorone, G.M. D'Amely Di Melendugno, S. D'Arrigo, B. Prenkaj, F. Galasso 2023 IEEE/CVF International Conference on Computer Vision (ICCV)

Pose Forecasting in Industrial Human- Robot Collaboration 2022
A. Sampieri,G.M. D'Amely,A. Avogaro,F. Cunico,Francesco Setti, G. Skenderi, M. Cristani, F. Galasso 17th European Conference on Computer Vision (ECCV)

- **SKILLS**

work as a team | Microsoft Office | Microsoft Word | Microsoft Excel | Microsoft Powerpoint | Microsoft Office

- **CONFERENCES & SEMINARS**

06/10/2024 - 12/10/2024 Abu Dhabi, UAE
IROS 2024

01/09/2024 - 07/09/2024 Milan, Italy
ECCV 2024

06/10/2024 - 12/10/2024 Paris, France
ICCV 2023

09/06/2024 - 15/06/2024 Vancouver, BC, Canada
CVPR 2024

16/10/2022 - 22/10/2022 Tel Aviv, Israel
ECCV 2022

12/06/2022 - 18/06/2022 New Orleans, Louisiana
CVPR 2022