Alessandro Flaborea

PhD in Computer Science

Ph.D. (ended in May 2024) with a strong background in Computer Vision and Machine Learning. Dedicated to advancing the frontiers of Artificial Intelligence through innovative research. Member of the Perception and Intelligence Lab (PINlab), collaborating with ItalAI. Specialized in video anomaly detection, procedural learning, human pose forecasting, and hyperbolic neural networks. Goal-oriented team member with strong project management skills. Capable of seamlessly handling diverse tasks while upholding high quality and performance standards.

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EDUCATION

University of Amsterdam (Dec. 2023 - Feb. 2024)
Visiting research
- **Supervisor:** Professor Pascal Mettes

Sapienza University of Rome (2021–2024)
Ph.D. in Computer Science
- PhD focused on computer vision, specialized in the analysis of human behaviours (e.g. pose forecasting, anomaly detection, egocentric vision) and interpretability.
- **Thesis:** Anomaly detection across different domains: the role of generative models, self-supervised learning, hyperbolic neural networks and large language models
- **Supervisor:** Professor Fabio Galasso

Sapienza University of Rome (2018–2020)
MSc Data Science – 110 cum laude/110
- **Thesis:** Query-Guided Few-Shot Learning

University of Udine (2014–2018)
BSc Computer Science
- **Thesis:** Integration and Interoperability in public administration systems
- **Study Abroad Program (Erasmus+):** University of Gothenburg, Sweden, 6 months

PUBLICATIONS

- **A. Flaborea***, G.M. D'Amely Di Melendugno*, L. Plini, L. Scofano, E. De Matteis, A. Furnari, G.M. Farinella, F. Galasso, "PREGO: online mistake detection in Procedural EGOcentric videos", Computer Vision and Pattern Recognition (CVPR), 2024
  Keywords: Mistake Detection, Procedural learning, LLM, Action Recognition

- G.M. D'Amely Di Melendugno*, **A. Flaborea***, P. Mettes, F. Galasso, "Hyp^{2}Nav: Hyperbolic Planning and Curiosity for Crowd Navigation", International Conference on Intelligent Robots and Systems (IROS), 2024
  Keywords: Reinforcement Learning, Crowd Navigation, Hyperbolic NN

- **A. Flaborea***, L. Collorone*, G.M. D'Amely Di Melendugno*, S. D'Arrigo*, B. Prenkaj, F. Galasso, "Multimodal Motion Conditioned Diffusion Model for Skeleton-based Video Anomaly Detection", International Conference on Computer Vision (ICCV), 2023
  Keywords: Video Anomaly Detection, Diffusion Models, Generative AI, GCN

- M.R. Ur Rahman, L. Scofano, E. De Matteis, **A. Flaborea**, A. Sampieri, F. Galasso. "Best Practices for 2-Body Pose Forecasting", Computer Vision and Pattern Recognition (CVPR) Workshops, 2023
  Keywords: Human Pose Forecasting, GCN

- **A. Flaborea**, B. Prenkaj, B. Munjal, M.A. Sterpa, D. Aragona, L. Podo, F. Galasso. "Are We Certain It's Anomalous?", Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops, 2023
  Keywords: Time series anomaly detection, Generative AI, GAN, Hyperbolic NN

- B. Munjal, **A. Flaborea**, S. Amin, F. Tombari, F. Galasso. "Query-guided networks for few-shot fine-grained classification and person search". Pattern Recognition, 2023
  Keywords: Few-shot Learning, Person Search, Query-guided NN

- B. Prenkaj, D. Aragona, **A. Flaborea**, F. Galasso, S. Gravina, L. Podo, E. Reda, P Velardi. "A self-supervised algorithm to detect signs of social isolation in the elderly from daily activity sequences." Artificial Intelligence in Medicine, 2023
  Keywords: Time series anomaly detection, Generative AI, GAN, Hyperbolic NN

TEACHING EXPERIENCE

Teaching Assistant (2019–2022)
Sapienza University of Rome
- "Advanced Machine Learning", MSc Data Science, 2022
- "Fundamental of Data Science", MSc Data Science, 2020-2022
- "Algorithmic Methods of Data Mining", MSc Data Science, 2019

AWARDS & FUNDING

- **Best Paper Award**: The work "Best Practices for 2-Body Pose Forecasting" was awarded as best paper of the Precognition workshop at CVPR 2023
- **Ph.D. Scholarship**: Winner of the PhD Scholarship (Funded by Regione Lazio and Datawizard s.r.l.)
- **Teaching Assistant**: Winner of the scholarship as Teaching Assistant of the Google Training Camp for the MSc in Data Science.
- **Teaching Assistant**: Winner of the scholarships as Teaching Assistant of the courses "Algorithmic Methods of Data Mining", "Fundamentals of Data Science" and "Advanced Machine Learning" of the MSc in Data Science.
- **Erasmus+ Program**: Winner of 6 months of scholarship.
- **Datathon 2019**: Awarded with a grant of 10.000€ for the project winner of the competition "Datathon", organized by the Italian Ministry of Economic Development.
- **"Stats Under the Stars" Hackathon 2019**: Awarded as the best team using SAS software and platform, organized by Bocconi University, Milan, Italy.

CONFERENCES & PRESENTATIONS

- Invited Speaker - Data Science Hub of Ferrari S.p.A., Topic: "Generative AI Models & Computer Vision Use Cases"
- Invited Speaker - Visual Anomaly and Novelty Detection workshop, CVPR 2023: "Are we certain it's anomalous?" spotlight paper presentation.

WORK EXPERIENCES

- **Software Developer**
  Infratel Italia, Nov 2019 to Jan 2020
  Development of the project winner of the Datathon 2019. Python, MySQL, QGis
- **Software Developer**
  Data Elaboration Center, Municipality of Lignano, Italy, Oct. 2017 to Jan 2018
  Thesis research internship.Python, Django

REFERENCES

- Professor Fabio Galasso [PhD supervisor, Master Thesis Advisor, co-author] – Sapienza University of Rome: Computer Science Dept., galasso@di.uniroma1.it
- Additional references will be provided upon request.