

Gianluca Scarpellini

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EDUCATION

ITALIAN INSTITUTE OF TECHNOLOGY

PHD IN COMPUTER SCIENCE

Present | Genoa, Italy

UNIVERSITY OF MILANO-BICOCCA


MS IN COMPUTER SCIENCE


Oct 2020 | Milan, Italy

BS IN COMPUTER SCIENCE

Jul 2018 | Milan, Italy

LINKS

 [gianscarpe](#)

 [gianlucascarpellini](#)

COURSEWORK

UNIVERSITY

Advanced Machine Learning

Computer Vision

Robotics

Probabilistic models

Machine Learning

ONLINE COURSES

AGI Safety Fundamentals [[BlueDot](#)]

Deep Reinforcement Learning [[GitHub](#)]

Probabilistic Machine Learning (Coursera)

SUMMER SCHOOLS

Probabilistic AI Summer School 2022

Eastern European Summer School 2021

Mediterranean Summer School 2021

SKILLS

PROGRAMMING LANGUAGES

Python • C++ • Node.js • C# • Matlab

Proficiency with:

Opencv • Pytorch • Pytorch-lightning

Jax • Haiku • Beam • Habitat

ABOUT ME

- Former Ph.D. under supervision of Dr. Alessio Del Bue and former intern at **DeepMind** with experience in leading projects on Computer Vision and Reinforcement Learning with 7 published papers and one patent;
- Excellent communication, cross-discipline collaboration, and leadership skills acquired through academic research, industry experience, and open-source contributions.
- Significant contributions to the open-source community of **PyTorch Lightning** with 4 merged PRs and 1,000 lines of code.

EXPERIENCE

GENESIS THERAPEUTICS | RESEARCH SCIENTIST

May 2024 - Present | Burlingame, US

- Post-training and scaling laws for generative models (diffusion and score-based models);

DEEPMIND | RESEARCH ENGINEER INTERSHIP

Sep 2022 - Jan 2023 | Robotics Team, London, UK

- Developed $\pi 2vec$, an approach leveraging foundation models for offline policy evaluation [1];
- Achieved an enhancement in policy evaluation efficiency, with performance gains of up to 10x observed on both real-world and simulated robotic platforms;
- **Paper** accepted at ICLR 2024 and under review for **patenting**.

ITALIAN INSTITUTE OF TECHNOLOGY | PH.D. STUDENT

Mar 2020 - May 2024 | Genoa, Italy

- Strong mathematical skills with expertise in Bayesian inference and generative AI, utilized in my novel **Diffusion Models** formulation that achieves state-of-the-art results on ordering text, 3D object reassembly, and outperforms long-lasting optimization methods for solving puzzles [2,3] [[Github](#)] (CVPR2024, Pattern Recognition). This work was extended for frescos reconstruction (Neurips 2024);
- Extended Geometrical GNN-based solutions for Machine Learning Potentials and Force Fields through a collaboration with Dompé pharmaceuticals;
- Extensive knowledge and experience in Reinforcement Learning (RL), as demonstrated by delivering a pipeline that leverages **curiosity-driven exploration** to improve a robot **object-detector** by 13% in challenging photorealistic scenarios (Habitat) and on real robots without any human interventions [4] (accepted at ECCV2024);
- Demonstrated ability to navigate technical complexity and ambiguity, as evidenced by successfully developing deep technical expertise in human pose estimation and person re-identification with event cameras [5,6];
- Mentored 2 **master students** working on Diffusion Models.

PYTORCH LIGHTNING | OPEN SOURCE CONTRIBUTIONS

Sep 2020 - Present

- Implemented an instance segmentation metric for Pytorch Lightning - Torchmetrics [PR], refined multi-gpu utilities [PR], and refactored tests for single and multi-GPUs [PR]
- Reviewed internal design choices [PR]



PUBLICATIONS

- [1] Gianluca Scarpellini, Ksenia Konyushkova, Claudio Fantacci, Thomas Paine, Yutian Chen, and Misha Denil. π^2 vec: Policy representation with successor features. In *The Twelfth International Conference on Learning Representations*, 2023.
- [2] Gianluca Scarpellini, Francesco Giuliari, Stuart James, Yiming Wang, and Alessio Del Bue. Positional diffusion: Ordering unordered sets with diffusion probabilistic models. Under review, 2023.
- [3] Gianluca Scarpellini, Francesco Giuliari, Pietro Morerio Stefano Fiorini, and Alessio Del Bue. Diffassemble: A unified graph-diffusion model for 2d and 3d reassembly. CVPR2024.
- [4] Gianluca Scarpellini, Stefano Rosa, Pietro Morerio, Lorenzo Natale, and Alessio Del Bue. Look around and learn: self-training object detection by exploration. ECCV, 2024.
- [5] Gianluca Scarpellini, Pietro Morerio, and Alessio Del Bue. Lifting monocular events to 3d human poses. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 1358–1368, June 2021.
- [6] Shafiq Ahmad, Gianluca Scarpellini, Pietro Morerio, and Alessio Del Bue. Event-driven re-id: A new benchmark and method towards privacy-preserving person re-identification. In *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, pages 459–468, 2022.
- [7] Gianluca Scarpellini, Ksenia Konyushkova, Claudio Fantacci, Tom Le Paine, Yutian Chen, and Misha Denil. π^2 vec: Policy representations with successor features. ICLR2024.