

I am broadly interested in Probabilistic Machine Learning, Perception and Geometry, with a focus on **Vision-Language Generative Models, Few-Shot Generation, Multitask Language Models, Diffusion Models, and Hierarchical Variational Inference.**

Experience

Applied Scientist, Amazon Science

Seattle, Washington, USA

April 2024 - Present

- Home Innovation Team.
 - Grounded Multimodal Generative Models
 - Retrieval and Generative Re-Ranking

Visiting Researcher, UCL Centre for Artificial Intelligence

London, UK

Jan 2024 - March 2024

- Host: David Barber
 - Multi-Resolution Convolutional Models for Long Sequences
 - Bayesian Inference for Language Models

Research Intern, Microsoft Research

Cambridge, Massachusetts, USA

Jun 2023 - Sept 2023

- ML and Statistics Group. Hosts: David Alvarez Melis, Nicolo Fusi
 - Dynamic Vocabulary Augmentation for LLMs

Visiting Collaborator, MIT-IBM AI Lab

Cambridge, Massachusetts, USA

Jan 2023 - June 2023

- Model Alignment Team. Host: Akash Srivastava
 - Generative Models for Systems with Constraints
 - Aligning Language Models with Negative Data

Research Scientist (PhD Intern), IBM Research

Zurich, Switzerland

Jun 2022 - Nov 2022

- Accelerated Discovery Team. Hosts: Matteo Manica, Teodoro Laino
 - Open-source library GT4SD for conditional generative models
 - Multitask Language Models for Text and Chemistry

Applied Scientist (PhD Intern), Amazon Science

Cambridge & London, UK

Jul 2021 - Oct 2021

- Alexa Team. Hosts: Yunlong Jiao, Emine Yilmaz
 - Domain Agnostic Subpopulation Generalisation

Research Engineer, NNAISENSE

Lugano, Switzerland

Jan 2019 - Jan 2020

- Deep Learning Team. Managers: Christian Osendorfer, Jonathan Masci
 - Structured Latent Variable Models

Machine Learning Engineer, Pi Campus

Rome, Italy

Oct 2018 - Dec 2018

- NLP for large scale data-driven early stage investing

Research Intern, Naver Labs Europe

Grenoble, France

Feb 2018 - Aug 2018

- Computer Vision Team. Host: Boris Chidlovskii
 - Deep Learning for Scene Understanding

Co-Founder, SecretAIry (formerly GAiA)

Rome, Italy

July 2017 - Jan 2019

- Chatbots to enhance Workplace Communication
 - Selected among 100+ startups to join the EnLabs Incubator

Education

PhD, Statistical Machine Learning

Technical University of Denmark, Lyngby, Denmark

June 2020 - Dec 2023

- Few-Shot Generative Models
- Hierarchical Variational Inference
- Thesis: Learning Generative Models with Limited Data
 - Supervisor: Ole Winther; Co-supervisor: Søren Hauberg

Visiting PhD Student, MIT School of Engineering

Cambridge, Massachusetts, USA

Jan 2023 - Sept 2023

- Constrained Diffusion Models for Engineering Design
- Improving Generative Constraint Satisfaction using Invalid Designs
- Evaluating Vision-Language Models for Engineering Tasks
- Research on LLMs for CAD. Co-developer of text2cad.
 - Host: Faez Ahmed, DeCoDE Lab

Master's Degree, Data Science

Sapienza University, Rome, Italy

Sept 2016 - Nov 2018

- Excellence Path & Summa Cum Laude
- Thesis: Multimodal Learning for Scene Understanding
 - Supervisor: Aris Anagnostopoulos; External Supervisor: Boris Chidlovskii

Visiting Graduate Student, NYU Tandon School of Engineering

NYC, New York, USA

Sept 2017 - Jan 2018

- Visualization and Data Analytics Research Center. Host: Enrico Bertini
 - Built an interactive entity retrieval tool to investigate 10M documents

Master's Degree, Mechanical Engineering

Sapienza University, Rome, Italy

Sept 2014 - Jan 2017

- Summa Cum Laude
- Thesis: Bubble Dynamics in Turbulent Shear Flows
 - Supervisor: Carlo Massimo Casciola; Co-supervisor: Paolo Gualtieri

Bachelor's Degree, Mechanical Engineering

Sapienza University, Rome, Italy

Sept 2009 - May 2014

- Thesis: Rapid Prototyping of Metallic Manufacturing

Publications & Patents

Reparameterized Multi-Resolution Convolutions for Long Sequence Modelling

Under-Review

CUNNINGHAM, GIANNONE, ZHANG, DEISENROTH

2024

Evaluating Vision-Language Models for Engineering Design

Under-Review

PICARD, EDWARDS, DORIS, MANN, GIANNONE, ALAM, AHMED

2024

NITO: Neural Implicit Fields for Resolution-free TO

Under-Review

NOBARI, GIANNONE, REGENWETTER, AHMED

2024

Aligning Optimization Trajectories with Diffusion Models

NeurIPS

GIANNONE, SRIVASTAVA, WINTER, AHMED

2023

Diffusing the Optimal Topology: A Generative Optimization Perspective

IDETC23

GIANNONE, AHMED

2023

Unifying Molecular and Textual Representations via Multi-task LM

ICML

CHRISTOFIDELLIS*, GIANNONE*, BORN, WINTER, LAINO, MANICA

2023

Accelerating Material Design with GT4SD

Nature npj Computational Materials

GT4SD Team (Core Contributor)

2023

Few-Shot Diffusion Models

SBM@NeurIPS

GIANNONE, NIELSEN, WINTER

2022

SCHA-VAE: Hierarchical Context Aggregation for Few-Shot Generation <u>GIANNONE</u> , <u>WINTHER</u>	ICML 2022
Method and apparatus for semantic segmentation and depth completion CHIDLOVSKII, <u>GIANNONE</u>	US Patent 2022
JM1: Worst-group Generalization by Group Interpolation <u>GIANNONE</u> , HAVRYLOV, MASSIAH, YILMAZ, JIAO	NeurIPS-W 2021
Hierarchical Few-Shot Generative Models <u>GIANNONE</u> , <u>WINTHER</u>	NeurIPS-W 2021
Transformation-aware Variational Autoencoders <u>GIANNONE</u> , SAREMI, MASCI, OSENDORFER	tech report 2020
Input-filtering NeuralODEs for spiking data <u>GIANNONE</u> , ANOOSHEH, QUAGLINO, D'ORO, MASCI, GALLIERI	NeurIPS-W 2020
\mathcal{T}-VAE: No Representation without Transformation <u>GIANNONE</u> , MASCI, OSENDORFER	NeurIPS-W 2019
Learning Common Representation from RGB and Depth Images <u>GIANNONE</u> , CHIDLOVSKII	CVPR-W 2019

Open-source

GT4SD: Generative Toolkit for Scientific Discovery	2022
<ul style="list-style-type: none"> – Library leveraging conditional generative models for accelerated discovery. – Core Contributor. – Work on Diffusion Models for images and 3D molecule conformation. The GFlowNet framework. Property Prediction module. Public Hub for model upload. Training Pipelines. Documentation. Tutorials. Testing. CI/CD. Server and Client API. Docker Images for CPU and GPU. 	

Grants & Awards

GPU Grant, LUMI-G, EuroHPC PI, Efficient Pre-training of Large Generative Models for Constrained Design	Copenhagen, Denmark <i>Nov 2023</i>
Grant, Otto Mønsted's Foundation Grant Research Abroad	Copenhagen, Denmark <i>Dec 2022</i>
Grant, Independent Research Fund Denmark DFF PhD Grant	Lyngby, Denmark <i>Jun 2020</i>
Grant, Perception as Generative Reasoning Workshop Complimentary Conference Registration	NeurIPS 2019 <i>Oct 2019</i>
Grant, Pi School Full tuition covered for the School of AI (3% acceptance rate)	Rome, Italy <i>Oct 2018</i>
Certificate of Award, Tsinghua University Prize for outstanding accomplishments (top 6)	Beijing, China <i>Aug 2018</i>
Certificate of Achievement, Naver Labs Europe Prize for the best internship performance	Grenoble, France <i>Jul 2018</i>
1st Pick, Excellence Path, Master's Degree, Data Science Admission based on the first year's academic performance Participation in activities at the School for Advanced Studies	Rome, Italy <i>Mar 2018</i>
1st Place, Global AI Hackathon, Italian Edition Our team built GAiA, a working assistant chatbot We won three prizes: Challenge Microsoft, People's Choice, Product Market Fit	Rome, Italy <i>Jun 2017</i>

Academic Service

Reviewer

Conference: ICML21 (top 10%), AISTATS21, ICML22, NeurIPS22, CVPR2023, NeurIPS23, ICML24

Conference (assisted review): ICML19, ICCV19, AAAI20

Journal: TPAMI, TMLR

Workshop: NeurIPS-IBW20, NeurIPS-MetaLearn21, ICML-DeployableGenAI23,
ACL-LanguageMolecules24

Teaching

Teaching: Deep Learning (DTU 02456), Bayesian Machine Learning (DTU 02477), Advanced Machine Learning (DTU 02460)

Supervision: two special courses (9 months), two master's thesis (6+6 months), 18 final projects

Volunteering

PAISS18, NeurIPS18, ELLIS Unit Copenhagen, MLLS

Skills

Languages

- Python (proficient); R, Matlab (good knowledge); C, Java, JavaScript (basic knowledge)

Research

- Accelerate, HF Transformers, LaTeX, NLTK, OpenCV, PyTorch, SpaCy, TensorFlow

Software

- AWS, CVX, Docker/podman, FastAPI, Git, GitHub Actions, Gradio, Linux, MinIO, MongoDB, MySQL, Travis

Miscellaneous

Summer/Winther Schools

- OxML22, ProbAI21, M2L21, SMILES20, EEML20, RegML20, ETH School on PDEs, Tsinghua DL 2018, PAISS18

Talks

- Algorithmic Methods for Data Mining (Sapienza University), Bayesian Reading Group (DTU), MLLS Center (KU), UCL-NLP (London), Amazon Alexa (Cambridge), DeCoDE Lab (MIT)

Online Education

- Coursera: Machine Learning (Oct 2016), Deep Learning (Aug 2017).
- edX:
 - Computer Science (Nov 2016), Artificial Intelligence (Apr 2017), CS50 (Jan 2021), Math for Quant Finance (Oct 2021), Causal Diagrams (Nov 2021), Science and Business of Biotech (Jun 2022).
- Udacity: Self-Driving Cars Nanodegree, 1st term (Dec 2017).

Associations/Communities

- Italian Association for Machine Learning (IAML);
- ContinualAI
- TribeAI