

GIULIO FRANZESE

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EDUCATION

Politecnico di Torino <i>Ph.D. in Electrical, Electronics And Communications Engineering</i> Thesis: Contributions to Efficient Machine Learning	2017 - 2021
Politecnico di Torino <i>Master's Degree in Telecommunications Engineering</i>	2014 - 2016
Politecnico di Torino <i>Bachelor's Degree in Telecommunications Engineering</i>	2011 - 2014

APPOINTMENTS

Assistant Professor Eurecom- Data Science Department	2024 -
Post Doctoral fellow Eurecom - Data Science Department	2020 -2024
Visiting Scientist Eurecom - Data Science Department	2019 - 2020
Researcher - Cisco contract with Politecnico di Torino	2018
Scholarship - Pre-PhD scholarship award Politecnico di Torino	2017
Internship - German Aerospace Center, Munich	2016

TEACHING EXPERIENCE

Responsible for the full course:	
• Optimization, Eurecom, France,	2022 - 2024
• Signal analysis and processing, TTPU Tashkent University- Uzbekistan	2018
Adjunct professor for lectures and laboratories	
• Master in Navigation and Related Applications, Politecnico di Torino,	2016
• Signal Theory, Politecnico di Torino	2017-2022
• ICT for health, Politecnico di Torino	2018
Invited lectures	
• Deep Learning, Eurecom, France,	2021

ACADEMIC SUPERVISION

PhD students and Post-Docs

- Mustapha Bounoua
- Chao Wang
- Alberto Foresti
- Antonio Mastropietro

Master students

- Giulio Corallo
- Julius Pesonen
- Pham Minh Duc

- Matteo Bunino
- Giuseppe Serra
- Ivan D'Onofrio
- Laila Sahli
- Anh Tuan Dao
- Alessia Toscano
- Giulia Cornara

PROJECTS

- NetCeption (co P.I.) Industrial Project on Machine Perception
- Adroit6G (co P.I.) European Project on Machine Perception

PUBLICATIONS

Selected Publications:

2024, Mustapha Bounoua, Giulio Franzese, Pietro Michiardi "SQI: Score-Based O-Information Estimation" (Oral) ICML 2024, Vienna

2024, Giulio Franzese, Mustapha Bounoua, Pietro Michiardi "MINDE: Mutual Information Neural Diffusion Estimation" ICLR 2024, Vienna

2023 Giulio Franzese, Giulio Corallo, Simone Rossi, Markus Heinonen, Maurizio Filippone, Pietro Michiardi "Continuous-time functional diffusion processes" Neurips 2023, New Orleans, USA

2022 Giulio Franzese, Simone Rossi, Lixuan Yang, Alessandro Finamore, Dario Rossi, Maurizio Filippone, Pietro Michiardi "How Much is Enough? A Study on Diffusion Times in Score-based Generative Models" In Entropy 2023; MDPI

2022 Giulio Franzese, Dimitrios Milios, Maurizio Filippone, Pietro Michiardi. "Revisiting the Effects of Stochasticity for Hamiltonian Samplers". In ICML 2022, Baltimore, Maryland USA

Full Publications:

2024, Giulio Franzese, Mattia Martini, Giulio Corallo, Paolo Papotti, Pietro Michiardi, "Latent Abstractions in Generative Diffusion Models", arXiv preprint arXiv:2410.03368

2024, Mustapha Bounoua, Giulio Franzese, Pietro Michiardi "SQI: Score-Based O-Information Estimation" (Oral) ICML 2024, Vienna

2024, Chao Wang, Giulio Franzese, Alessandro Finamore, Massimo Gallo, Pietro Michiardi "Information Theoretic Text-to-Image Alignment", arXiv preprint arXiv:2405.20759

2024, Giuseppe Di Giacomo, Giulio Franzese, Tania Cerquitelli, Carla Fabiana Chiasserini, Pietro Michiardi, "DiMViS: Diffusion-based Multi-View Synthesis", ICML 2024 Workshop on Structured Probabilistic Inference and Generative Modeling

2024, Giulio Franzese, Mustapha Bounoua, Pietro Michiardi "MINDE: Mutual Information Neural Diffusion Estimation" ICLR 2024, Vienna

2024 Mustapha Bounoua, Giulio Franzese, Pietro Michiardi, "Multi-modal Latent Diffusion", In Entropy 2024; MDPI

2023 Giulio Franzese, Giulio Corallo, Simone Rossi, Markus Heinonen, Maurizio Filippone, Pietro Michiardi "Continuous-time functional diffusion processes" Neurips 2023, New Orleans, USA

2023 Ba-Hien Tran, Giulio Franzese, Pietro Michiardi, Maurizio Filippone "One-Line-of-Code Data Mollification Improves Optimization of Likelihood-based Generative Models" Neurips 2023, New Orleans, USA

2023 Mustapha Bounoua, Giulio Franzese, Pietro Michiardi, "Masked Multi-time Diffusion for Multi-modal Generative Modeling" Neurips 2023, Workshop on Diffusion Models, New Orleans, USA

2023 Giuseppe Di Giacomo, Giulio Franzese, Tania Cerquitelli, Carla Fabiana Chiasserini, Pietro Michiardi "Multi-View Latent Diffusion" 2023 IEEE International Conference on Big Data

2023 Ba-Hien Tran, Giulio Franzese, Pietro Michiardi, Maurizio Filippone "Improving Training of Likelihood-based Generative Models with Gaussian Homotopy" SPIGM 2023, 1st Workshop on Structured Probabilistic Inference & Generative Modeling, ICML 2023

2022 Giulio Franzese, Simone Rossi, Lixuan Yang, Alessandro Finamore, Dario Rossi, Maurizio Filippone, Pietro Michiardi "How Much is Enough? A Study on Diffusion Times in Score-based Generative Models" In Entropy 2023; MDPI

2022 Giulio Franzese, Simone Rossi, Lixuan Yang, Alessandro Finamore, Dario Rossi, Maurizio Filippone, Pietro Michiardi "A New Look on Diffusion Times for Score-based Generative Models" ICML 2022, Continuous time methods for machine learning Workshop, Baltimore, USA

2022 Giulio Franzese, Dimitrios Milios, Maurizio Filippone, Pietro Michiardi. "Revisiting the Effects of Stochasticity for Hamiltonian Samplers". In ICML 2022, Baltimore, Maryland USA

2021 Giulio Franzese , Dimitrios Milios, Maurizio Filippone and Pietro Michiardi (2021). "A Scalable Bayesian Sampling Method Based on Stochastic Gradient Descent Isotropization". In Entropy 2021, MDPI

2021 Giulio Franzese ,Yiqing Yan, Giuseppe Serra, Ivan D'Onofrio, Raja Appuswamy, Pietro Michiardi "Generative DNA: Representation Learning for DNA-based Approximate Image Storage". In 2021 International Conference on Visual Communications and Image Processing (VCIP), Munich, Germany

2020 Giulio Franzese, Monica Visintin. "Probabilistic Ensemble of Deep Information Networks". In Entropy 2020, MDPI

2020 Giulio Franzese, Nicola Umberto Linty, Fabio Dovis. "Semi-Supervised GNSS scintillations detection based on DeepInfomax". In Applied Sciences 2020, MDPI

2019 Rosa Candela, Giulio Franzese, Maurizio Filippone, and Pietro Michiardi. "Convergence Analysis of Sparsified Asynchronous SGD". In arXiv:1910.09466

2018 Giulio Franzese, Monica Visintin. "Deep Information Networks". In arXiv:1803.02251

2018 Letizia Lo Presti, Giulio Franzese. "GNSS for Rail Transportation: Challenges and Opportunities". In GNSS for Rail Transportation: Challenges and Opportunities (Springer), pag. 59-86, ISBN 9783319790848

2018 Letizia Lo Presti, Giulio Franzese. "GNSS for Rail Transportation: Challenges and Opportunities". In GNSS for Rail Transportation: Challenges and Opportunities (Springer), pag. 25-58, ISBN 9783319790848

2017 Giulio Franzese, Iliara Martini, Letizia Lo Presti "A novel Markov Model for the computation of the continuity risk in Maritime applications". In Proceedings of the 2017 International Technical Meeting of The Institute of Navigation, Monterey, California, US

2014 Giulio Franzese, Sabrina Ugazio, Letizia Lo Presti "LOS/NLOS detection combining adaptive filtering and channel propagation model". In Satellite Navigation Technologies and European Workshop on GNSS Signals and Signal Processing (NAVITEC), 2014, Noordwijk, Netherlands

INVITED TALKS

13/06/24 Huawei R&D Datacom Technical Seminar. Paris, 2024. "Mutual Information Neural Diffusion Estimation"

25/09/23 Huawei Strategy and Technology Workshop 2023. Munich. Invited Panelist.

07/02/23 Huawei R&D Datacom Technical Seminar. Paris. "Functional Diffusion Models"

07/02/22 Huawei R&D Datacom Technical Seminar. Paris. "Generative Diffusion Models: Key Ideas, Current Practice and Challenges"

01/03/22 DISMA Polito Seminar of Excellence. Turin. "Generative Diffusion Models: Key Ideas, Current Practice And Challenges" <https://www.youtube.com/watch?v=GZ0h6YtZV-k>

REVIEWING EXPERIENCE

- NeurIPS 2023 Workshop DGM4H
- NeurIPS 2023 Workshop Diffusion
- JMLR
- ICLR, ICML, AISTATS, NeurIPS
- Journal of the Audio Engineering Society

HONORS AND AWARDS

- PhD scholarship, Politecnico di Torino
- pre-PhD scholarship, Politecnico di Torino

PATENTS

- **Renault** [2023] : “Reconstruction of impaired sensor data through multi-modal latent diffusion model”