FRANCESCO PASE

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WORK EXPERIENCE

Oct 2020 – present — **University of Padova** — Padova, Italy
PhD Student in Information Engineering
Conducting research on Communications Theory and Machine Learning with the SIGNET group, under the supervision of prof. Michele Zorzi.

Jul 2020 – Oct 2020 — **InstaDeep Ltd** — London, UK
4 months — *Research Intern (Remotely)*
- Research on the '*Control as Inference*' framework and Maximum-Entropy Reinforcement Learning, study of Sequential Monte Carlo methods to do inference in probabilistic models.
- Development of a complete framework to exploit the sequential MC trajectories (AlphaZero-like) and a simulation environment (gym-compatible) to test the algorithm.

Dec 2019 – Jun 2020 — **University of Padova** — Padova, Italy
7 months — *Graduate Research Fellow*
- Conducting research on deep reinforcement learning for communications and networking.
- Efficient data dissemination in vehicular networks (with Toyota Motor North America).
- Coordination and communication strategies for swarms of drones.

Feb 2019 – Jul2019 — **Learn to Forecast - L2F** — EPFL Innovation Park, Lausanne, Switzerland
5 months — *Master's Thesis Project*
- Machine Learning on graphs: research on Simplicial Complexes embedding (and graphs as special cases) developing a new promising method. Good results obtained in classifying chemical molecules as active or non-active HIV inhibitors.
- The code was part of the open-source library g*iotto-learn* on topological data analysis[link].
- Blog article and code on molecules application [link].

EDUCATION

Oct 2020 – present — **University of Padova** — Padova, Italy
PhD Student in Information Engineering

Sept 2017 – Sept 2019 — **University of Padova** — Padova, Italy
2 years — *Master of Science in Telecommunications Engineering* :
- Courses : Wireless Communications, Network Modeling, Machine Learning, Network Science, Human Data Analytics, Big Data, Telecommunications Networks.
- Final Grade: 110/110 cum Laude

Sept 2018 – Jul 2019 — **Ecole Polytechnique Fédérale de Lausanne (EPFL)** — Lausanne, Switzerland
10 months — *SEMP Scholarship Winner (first classified)* :
- One year of exchange program, including master's courses and master's thesis.
- Courses: Artificial Neural Networks, Learning Theory, Intelligent Agents, Network Tour of Data Science, Dynamical Systems Theory, Information Theory and Signal Processing, Distributed Algorithms.

Sept 2014 – Sept 2017 — **University of Padova** — Padova, Italy
3 years — *Bachelor of Science in Information Engineering* :
- Key subjects: Mathematical Analysis and Physics, Linear Algebra, Probability Theory, Object-Oriented and Structured Programming , Signals and Systems, Electronics, Telecommunications.
- Student representatives (Two years)
- Final Grade: 110/110

Sept 2009 - Jul 2014 **Liceo Scientifico "G. Marconi"** Conegliano, Italy
5 years *Scientific Diploma* :

- In depth: Math, Physics and Natural Sciences, Literature, Philosophy, Latin.
- Merit based scholarship provided by the Council of Conegliano.

PROJECTS & PAPERS

- First author, "Bike Sharing and Urban Mobility in a Post-Pandemic World", IEEE Access, Vol. 8, Pag. 187291-187306 (Oct 2020)
- Co-authored, "Distributed Reinforcement Learning for Flexible UAV Swarm Control with Transfer Learning Capabilities", MobiSys 2020, ACM Workshop on Micro Aerial Vehicle Networks, Systems, and Applications. (DroNet 2020)
- Airlines classification using flight routes network features for the course " Network Tour of Data Sceince". Project developed in Python: numpy, pandas, networkx, scipy (Jan 2019)
- Studied and Developed a Denoising Convolutional Autoencoder in Python (tensorfow, keras) for the Master's course Human Data Analytics": the goal was to reduce the size of a classifier (CNN) for Speech Recognition. (Jun 2018)
- Bachelor's Thesis on statistical pattern matching applied to DNA sequences analysis: in-depth analysis of Probabilistic Arithmetic Automata and its implementation in Java aimed at comparing theoretical Poisson approximation and real k-mers statistical distributions. (Jul 2017)

SKILLS AND INTERESTS

- **Foreign Languages**: Italian: native | English: fluent
- **Programming Languages**: C, Java, Python (tensorflow, keras, numpy, pandas, networkx, scipy, gym), hydra, wandb, SQL, LaTex, Matlab.
- **Sports**: Football (14 years practice – member of professional team (Udinese Calcio); participated to national and international tournaments; Played as captain of regional representative team).
- **Tools:** Excellent knowledge of most popular OS and following tools: Git, jupyter notebook, Gephi, Matlab, Eclipse.
- **Interests**: Philosophical and scientific readings since first years of high-school, running, football.