The Galileo Galilei Institute for Theoretical Physics
Arcetri, Florence

Machine Learning at GGI

Aug 22, 2022 - Sep 30, 2022

Machine learning is nowadays an important toolbox for theoretical and experimental physics, and its importance is expected to steadily grow in the coming years. Thanks to its effectiveness and extreme flexibility, it has been successfully used in very different research areas, such as high-energy physics, astrophysics and cosmology, condensed matter and statistical physics. The aim of the workshop is to bring together researchers with interests and expertise in machine learning from different fields in physics, strongly encouraging and promoting cross-topic exchange of ideas and collaborations.
Three broad research areas will be covered:High-Energy Physics, Astrophysics, Cosmology and Astroparticles, Condensed Matter and Statistical Physics (including Quantum Information). The distinctive trait of the workshop will be the focus on theoretical physics in a broad sense, including data analysis as well as simulation and modelling

Topics:

- Methods for regression and statistical analysis
- Monte Carlo integration and simulation
- Anomaly detection
- Classification
- Time series analysis
- Clustering and multi-dimensional visualization
- Equation solving
- Artificial intelligence-inspired and -augmented science
- Statistical physics algorithms for optimization and learning problems
- Quantum machine learning

Organizing Committee:
Massimo Brescia (INAF Napoli)
Filippo Caruso (U. Firenze)
S. George Djorgovski (Caltech)
Duccio Fanelli (U. Firenze)
Alessandro Marconi (U. Firenze)
Florian Marquardt (Max Planck Erlangen)
Giuliano Panico (U. Firenze)
Jesse Thaler (MIT)
Andrea Wulzer (CERN & U. Padova)

Contact persons: giuliano.panico@unifi.it

GGI: http://www.ggi.infn.it/

Deadline for applications: March 31, 2022