Enrico Rinaldi, PhD

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Internationally recognized researcher in computational theoretical high energy and nuclear physics, with 10 years of experience in programming, data analysis and Monte Carlo methods using Top500 high performance computing resources. Outstanding publication record and presentation skills in an international community. Strong curiosity towards new challenges and ability to deliver results on time, even when tackling previously unknown subjects. Hands-on experience with ML research in physics and business. Able to take the lead and perform well as part of a team. Avid learner with strong analytical, modeling and data oriented backgrounds. Working towards advancing artificial intelligence applications to benefit society, starting from fundamental science.

Skills

- Daily experience with data manipulation, statistical analysis, Monte Carlo methods, deep learning.
- Programming experience in Python and C/C++
- Experience with ML tools (TensorFlow & PyTorch)
- Excellent presentation skills (research papers with thousands of citations)
- Excellent ability to actively lead a collaborative effort and communicate in a team

Experience

RESEARCH SCIENTIST, UNIVERSITY OF MICHIGAN & RIKEN – 2020-PRESENT

- Research on algorithms to solve outstanding quantum physics problems using machine learning and quantum technologies (Quantum Annealing, Coherent Ising Machines, Simulated-based Inference…)
- Scientific machine learning activities, including large HPC simulations and data analysis

ARTIFICIAL INTELLIGENCE RESEARCHER, ARITHMER INC. – 2019-2020

- Research novel algorithms for 3D deep learning strategies to enable fast and accurate scene segmentation (used in conjunction with robotic systems)
- Support engineers with state-of-the-art machine learning models in computer vision, graph learning, natural language processing
- ➡ Skillset: 3D Perception, Geometric Learning, Graph Learning, Quantum Annealing, Computer Vision

SPECIAL POSTDOCTORAL RESEARCHER, RIKEN (JP) /BNL (US) – 2016-2019

- Successfully secured a highly competitive Japanese fellowship with personal research grant for 3 years to perform research on Monte Carlo calculations of strongly-coupled quantum gauge theories for describing dark matter and aid experimental searches that are undergoing in the US using multi-million $ experiments
- Designed numerical simulations using massively parallel supercomputers (NVidia GPUs) leading to a published research article on the journal Nature and ACM Gordon Bell competition final for scientific HPC.
- ➡ Skillset: High Performance Computing, GPU computing, Bayesian Data Analysis, Unsupervised Deep Learning

POSTDOCTORAL RESEARCHER, LAWRENCE LIVERMORE NATIONAL LABORATORY (US) – 2013-2016

- Leading projects culminating in scientific publications with hundreds of citations as a member of 4 international collaborations (LatKMI, LatticeStrongDynamics, CalLat and MCSMC)
- Developed open-source code for Monte Carlo simulations and time series analysis
- ➡ Skillset: Data Mining, SQL, Time Series Analysis, Markov Chain Monte Carlo, Sampling, Curve Fitting

Education

- University of Edinburgh, Edinburgh, UK – **PhD in Theoretical Particle Physics**, 2013
  supported by prestigious SUPA (Scottish Universities Physics Alliance) scholarship for 3.5 years (and JSPS fellowship for 0.5y)
  awarded Diploma Prize at International School of Subnuclear Physics, Erice, Italy (2011) for work on Extra Dimensions
- University of Milan, Milan, Italy – **Master of Science in Theoretical Physics**, 2009
  supported by scholarship "Homo Sapiens Sapiens"
- University of Milan, Milan, Italy – **Bachelor of Science in Physics**, 2007

Software stack and skills

- Certifications: "Advanced Machine Learning with TensorFlow on Google Cloud Platform", "Getting Started with Google Kubernetes Engine", "Databases and SQL for Data Science"
- High Performance Computing software: C/C++, NVidia CUDA, Julia
- Data Science: SQL (and variants), Python libraries (numpy, pandas, scipy, numba, dask)
- Machine Learning: TensorFlow (and Keras), PyTorch, scikit-learn, OpenCV
- Language: Italian (native), English (fluent), Japanese (basic)