

Angelo Monteux | Resume

THEORETICAL PARTICLE PHYSICIST, ASPIRING DATA SCIENTIST – Denver, CO

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Skills

LANGUAGES: Python, Mathematica, Bash Shell, C/C++ in scientific environment. Fluent in English, Italian, French.

TOOLS: numpy, jupyter, matplotlib, pandas, basemap (*fluent*); git, scikit-learn, keras, tensorflow, opencv (*some experience*).

TECHNICAL SKILLS: statistics, machine learning, advanced quantitative analytics, data analysis and visualization.

SOFT SKILLS: collaborative work, creative thinking, problem solving, planning and prioritization, communication.

Data Science Projects

◦ Data mining the LHC

ilmonteux.github.io/LHC_rectangular_aggregation

Data-mining algorithm to distinguish signal in high-dimensional datasets, such as results of experimental searches at the Large Hadron Collider (LHC). Using log-likelihood ratio test to establish statistical significance, including treatment of correlations in data. Presented in the published paper arXiv:1707.05783 and at international conferences.

◦ Jet tagging with machine-learning

Use convolutional neural networks (CNN) to automatically distinguish different particles at the LHC. Standard ML techniques used in image tagging. Involved in initial steps of the paper arXiv:1803.00107.

◦ chronomaps

ilmonteux.github.io/chronomaps

Use Google Maps API to compute travel times from given location. Visualize fixed-time contours on map, and deform map in terms of travel time instead of distance.

◦ Cartograms of US elections

ilmonteux.github.io/cartograms

Mapping US election data at the state and county level. Produce cartograms, which change map area to reflect population instead of land surface. Analyze demographics trends and correlations with voting choices.

Work Experience

Postdoctoral work.....

University of California, Irvine

Postdoctoral researcher, UC Irvine particle theory group.

Irvine, CA

2017–present

Rutgers University

Postdoctoral researcher, New High Energy Theory Center.

New Brunswick, NJ

2014–2017

- Write versatile MonteCarlo simulation scripts for generating jobs to run on a HTCondor parallel cluster (1000 nodes).
- Developed framework for quick reinterpretation of LHC results in 2016, built largest LHC search database to date, including being the first and so far only group taking into account correlations in experimental searches for 2+ years.
- Achieve speed-up by factor of 10 by porting Partial Differential Equation code from Mathematica to C++.
- Develop research ideas and projects from start to publication in short timescale, both by myself and with collaborators.
- Participate in data science workshops, such as the 2017 school on Computational and Data Science for High Energy Physics (CoDaS-HEP) in Princeton, or Neural Networks with Python course at the UC Irvine Data Science Initiative.

Education

Ph.D. Theoretical Particle Physics

University of California, Santa Cruz

Santa Cruz, CA

2010–2014

M.S. Theoretical Physics

University of Parma, Italy

Parma, Italy

2008–2010

B.S. Physics

University of Parma, Italy

Parma, Italy

2004–2008