



## MAURO VERZETTI, PH.D.

High energy physicist with over nine years of experience in data science and data mining at the Large Hadron Collider. Specialised in statistical modelling of the data, both through ansatz fitting and machine learning. Skilled software developer, fluent in both python and C++. Currently leading a team of ~50 people focused on object classification and interacting with all the major stakeholders of my experiment.

### PERSONAL INFO

**Home address:** 169 Rue de battoirs, 01710 Thoiry, FRANCE

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**github:** <https://github.com/mverzetti/>

### SKILLS

**OS:** Linux, Windows, OSX

**Programming languages:** python, C++, shell scripting, Ruby, Java, HTML and JSON formats, cgi scripting.

**Scientific software:** numpy, scipy, numba, **pandas, xgboost, scikit-learn, Keras, TensorFlow**, ROOT, RooFit, rootpy, SQL.

**Development tools:** version control softwares like SVN, CVS and GIT.

**Miscellaneous:** good analytical and organisational skills. Ability to produce quality results in reduced amount of time, meeting agreed schedules. Group computing cluster administrator (Linux and Mac).

### LANGUAGES

**Italian:** mother tongue.

**English:** fluent (C1)

**French:** intermediate (A2/B1)

### WORKING EXPERIENCE

DATA ANALYST - CERN

*Research fellow - High energy physics*

2017 - now

Project manager in the CMS collaboration for data classification. Responsible for the development and maintenance of the classification algorithms of the experiment.

Developed novel classification for electrons with xgboost and bayesian optimisation improving the classification accuracy by 40%.

DATA ANALYST - FWO (FONDS WETENSCHAPPELIJK ONDERZOEK)

*Post-doc research associate - High energy physics*

2017 - now

Recipient of a FWO Post-doctoral grant. Currently on hold due to the CERN Fellow appointment.

DATA ANALYST - UNIVERSITY OF ROCHESTER

*Post-doc research associate - High energy physics*

2014 - 2017

Focus on data classification with ML algorithms. Followed product development from conception to deployment.

Developed new jet classifier with sklearn ensembles (gradient boosting) and with deep neural networks (TensorFlow + Keras) using a wide variety of technologies (CNN, LSTM, Dense). Developed stand-alone multi-threaded tool for out-of-memory training of ANNs on large datasets.

### EDUCATION

UNIVERSITY OF ZURICH (SWITZERLAND)

*Ph.D in particle physics*

Sept. 2014

Thesis title: "Search for the Standard Model Higgs in Tau Decays in Association with a W Boson"

Developed a novel background estimation technique based on kNN classifiers.

UNIVERSITY OF TURIN (ITALY)

*Master in physics*

2010

Grade: 110/110 cum laude and "menzione", awarded as best thesis for the year 2009/2010 in

High Energy Physics.

Thesis topic: Search of the  $\eta_b$  resonance from  $Y(2S)$  decays at BELLE.

CERN

*Summer student*

Jun.-Aug. 2008

Internship at CERN, collaborating in the commissioning of the ALICE muon spectrometer.

### AWARDS

Best thesis (high energy physics) - year 2009/2010

Feb. 2012

Awarded by University of Torino (Italy).

Premio Optime

Sept. 2011 and Sept. 2009

Awarded by Unione Industriale di Torino (Italy)

The Optime Prize is awarded to the best students of Turin University and Polytechnic each year.

### HOBBIES

I love wilderness, I practice hiking, mountain biking, skiing (alpine and backcountry), and sailing. I like travelling and discovering new cultures and new customs.