

# Othmane Rifki, Ph.D.

+1-773-888-3269   othrif@gmail.com   /othrif   Permanent US Resident

## Summary

Data scientist and physicist with **8 years experience** at **CERN** in solving complex problems with **scientific rigor**. Performed advanced statistical analysis of **datasets of hundreds of petabytes** collected from 100 million sensors and processed with worldwide **distributed cloud computing**. Applied **optimization** and **machine learning** techniques to high-dimensional datasets. Maintained **monitoring tools** of data quality using **anomaly detection** and **time series** analysis.

## Experience

- ☑ **Conseil Européen pour la Recherche Nucléaire (CERN)** **Geneva, Switzerland**  
☑ **Deutsches Elektronen-Synchrotron (DESY)** **Hamburg, Germany**  
*Post-Doctoral Research Fellow, Associate Member* *Aug 2016 - Present*
  - Helped refute one of the most promising hypotheses on the nature of dark matter (85% of the mass of the universe), by analyzing 10 million billion proton collisions of **complex and high dimensional data**
  - Narrowed the search for new particles of supersymmetry by 50% via likelihood-based statistical analyses on petabyte-scale dataset using **predictive modeling algorithms**
  - Built **economical** micron-level precision pick-and-place assembly unit using computer vision algorithms to build the next-generation multi-million dollar particle detector; see here a [video](#) of the machine at work
  - Oversaw the project expenditure budget of \$300k while coordinating a team of scientists, engineers, and suppliers
  - Supervised a team of 10 scientists and rotated on-call responsibility to achieve a data recording efficiency of 95%
- ☑ **Argonne National Laboratory (ANL)** **Chicago, United States**  
*Research Fellow* *May 2014 - Jul 2016*
  - Used **IBM Mira supercomputer** to generate Monte Carlo simulation of millions of complex particles interaction leading to a 1000x speed-up and results used by hundreds of data analyses
  - Developed a **real-time filtering** system to process 160 GBPS enabling 3000+ scientists to analyze 20% more proton collision data 400x more efficiently
  - Won \$30k Analysis Support Center Fellowship awarded to one student a year to work with ANL scientists

## Skills

- ☑ **Software:** Analyzed and visualized high-value datasets
  - **Languages** (10+ years): Python, C/C++/STL
  - **Data science** (5+ years): SQL, Numpy, Scipy, Pandas, Keras, Scikit-learn, PyTorch, TensorFlow, OpenCV, Matplotlib
  - **General** (5+ years): Matlab, Mathematica, Linux, Bash Scripting, Git, Jira
- ☑ **Leadership:** Led several **cross-functional** teams with regular deadlines and quarterly publications
  - Organized and chaired regular meetings and delegated tasks with emphasis on individual strengths
  - Managed teams of **5-20 researchers** to develop analysis, forecasting, and optimization methods
  - Supervised **10 graduate students** with successful thesis defenses
- ☑ **Publication and Presentation:** Excelled in verbal and written communication
  - Presented findings for stakeholders through **visual displays of quantitative information**
  - Authored **complex research work** for specialists and general audience; see an [example](#) and the complete [list](#)
  - **Fluent** in English, French, Arabic with basic skills in German

## Education

- ☑ **University of Oklahoma (OU)** *Ph.D. in High Energy Physics* **Norman, OK, United States**
- ☑ **Drexel University** *B.Sc. in Physics with High Honors* **Philadelphia, PA, United States**

## Activities

- ☑ **Triathlon:** Competed in the Hamburg Landesliga in the 2018 and 2019 seasons
- ☑ **Diving:** CMAS 3 star diver with TDI advanced nitrox certification