

# Othmane Rifki, Ph.D.

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## Summary

Data scientist and physicist with **8 years experience** in advanced statistical analysis. Deployed **online filtering** algorithms for on-the-fly selection of proton collision data. Maintained monitoring and validation tools for detector performance and data quality using **anomaly detection** algorithms and **time series** analysis. Developed the main data analysis software framework (for 50+ people) relying upon **version control** and **issue tracking** tools.

Led several **cross-functional** analysis teams with weekly deadlines and quarterly scientific publications searching for rare signal processes of new physics among large backgrounds, employing numerous optimization and regression modeling techniques, leveraging **machine learning** algorithms and **deep learning** frameworks. Analyzed large datasets of proton collisions recorded at CERN and processed with world-wide distributed computing systems (grid and cloud).

## Skills

- 🎯 **Languages:** Analyzed and visualized high-value datasets with software packages developed in multiple languages
  - Core languages (10+ years): Python, C/C++/STL
  - General software (5+ years): Matlab, Mathematica, Linux, Bash, Git, Svn, Jira
  - Data science software (3+ years): Matplotlib, Numpy, Scipy, Scikit-learn, Pandas, Keras, TensorFlow, OpenCV
- 🎯 **Leadership:** Led several scientific groups to achieve time-critical targets
  - Organized and chaired weekly meetings and delegated tasks with emphasis on individual strengths
  - Managed teams of **5-20 researchers**
  - Supervised graduate students with successful thesis defenses
- 🎯 **Publication and Communication:** Excelled in written and verbal communication skills
  - Published in peer-reviewed particle physics and instrumentation journals; see a complete list [here](#)
  - Participated in several **international conferences** and presented scientific advancements
  - Authored research work at various outreach activities; see an example [here](#)
  - **Fluent** in English, French, Arabic with basic skills in German

## Experience

- 🎯 [Conseil Européen pour la Recherche Nucléaire \(CERN\)](#) **Geneva, Switzerland**  
Aug 2016 - Present  
*Post-Doctoral Research Fellow, Associate Member*
  - Built **economical** micron-level precision pick-and-place assembly unit using computer vision algorithms; see here a [video](#) of the machine at work
  - Oversaw the laboratory expenditure budget while coordinating a team of scientists, engineers, and suppliers
  - Supervised a team of 10 scientists to ensure high-quality data recorded by the ATLAS detector
  - Performed likelihood-based statistical analyses on a petabyte-scale dataset, using predictive modeling algorithms
- 🎯 [Argonne National Laboratory \(ANL\)](#) **Lemont, IL, United States**  
May 2014 - Jul 2016  
*Research Fellow*
  - Used **IBM Mira supercomputer** to simulate complex particles production and interaction
  - Designed and implemented a **real-time data filtering** system to process 160 GBPS
  - Won \$30k Analysis Support Center Fellowship awarded to one student a year to work with ANL scientists

## 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