Othmane Rifki, Ph.D.

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Summary

Data scientist and physicist with **8 years experience** in advanced statistical analysis of datasets of hundreds of petabytes at CERN. Deployed **online filtering** algorithms for on-the-fly selection of 10 million billion proton collision data. Employed numerous optimization and regression modeling techniques, leveraging **machine learning** algorithms and **deep learning** frameworks. Maintained monitoring and validation tools for detector performance and data quality using **anomaly detection** algorithms and **time series** analysis.

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
  - distributed computing systems

- **Leadership and Teamwork:** Led 5 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**
  - Mentored **7 graduate students** with successful thesis defenses
  - Led several **cross-functional** analysis teams with weekly deadlines and quarterly scientific publications searching for rare signal processes of new physics among large backgrounds

- **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
  - Explained and authored complex research work to general audience; see an example here
  - **Fluent** in English, French, Arabic with basic skills in German

Experience

Conseil Européen pour la Recherche Nucléaire (CERN)   **Geneva, Switzerland**
Post-Doctoral Research Fellow, Associate Member   *Aug 2016 - Present*
- 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
- Developed the main data analysis software framework (for 50+ people) relying upon **version control** and **issue tracking** tools

Argonne National Laboratory (ANL)   **Lemont, IL, United States**
Research Fellow   *May 2014 - Jul 2016*
- 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