Harrison Ellis Sims

Data Analyst

Citizenship: Dual US/UK harrysims94@gmail.com Github: hs00165

PERSONAL STATEMENT

My passion for extracting meaningful and thought-provoking insights from interesting data sets originates from my experience in experimental nuclear physics. This background has equipped me for working in this field through robust and efficient data analyses, user-friendly software development, and clear result communication.

KEY SKILLS

- Proficient in programming languages: Python (Pandas, NumPy), C++, MATLAB, html-css-js.
- Have an unquenchable passion for learning new techniques and skills.
- Experienced in data visualization tools such as Tableau, MatPlotLib and Plotly.
- Extensive presentation skills for a vast range of audiences, demonstrated through numerous invited talks and Chair opportunities at national and international conferences.
- Highly experienced in extracting meaningful physics results from large ($\sim$3 Tb) data sets, even when the data is compromised or incomplete.
- Use ML techniques to identify solutions and make recommendations. Incorporated linear and logistic regression models to characterize sensitive detectors and classify reaction events. Also developed a Naive-Bayes neural network to identify and extract the ingredients and instructions from tedious recipe blog websites via NLP.
- Skilled in 3D and 2D CAD software: AutoCAD, Fusion360, Cura: Develop high-quality 3D renderings and descriptive animations of hardware designs for funding proposals.

EXPERIENCE

Experimental Data Analyst: Postdoctoral Associate **New Brunswick, NJ / Oak Ridge, TN**
Rutgers University / Oak Ridge National Laboratory *October 2020 - Present*

- Invented and developed a technique to measure a nuclear reaction of D.O.E. importance to a high precision while using fewer resources - significantly reducing cost and increasing facility efficiency. To understand the efficacy of this method prior to the full analysis, I simulated the data via Monte Carlo to ensure a productive and effective workflow. I then applied this technique to real-world data, successfully analyzing the results.
- Consulted for U.S. and international scientists in submitting experimental proposals to U.S. facilities, communicating important information regarding the capabilities of the setup, and simulating data to demonstrate the prospects of a particular proposal. 100% of consulted submissions have been accepted with Priority 1.
- Mentor and support graduate and undergraduate students in their research. Assist in data analysis (often with fitting routines) and statistical analysis concepts in general.
- Developed multiple codes with user-friendly GUIs, used by students and collaborators to improve proposal work-flow. For example I constructed a Tableau dashboard that calculates reaction properties based on user-input. This allowed collaborators to simulate reactions *themselves* without coding or simulation experience.

Internship - Detector Diagnostics, Nuclear and Particle Physics group **Livermore, CA**
Lawrence Livermore National Laboratory *June 2017*

- Developed the method to efficiently diagnose specific channels from a detector through automated analysis.

Ph.D. Graduate research **New Brunswick, NJ / Oak Ridge, TN**
Rutgers University / Oak Ridge National Laboratory *September 2016 - October 2020*

- Clean, calibrate and analyze data from the ^{84}Se(d,p) reaction as my thesis project.
- Characterize and test multiple detector types via custom-made linear regression models.
- Present analysis results at weekly group meetings, as well as at conferences and workshops across the U.S.

EDUCATION

Rutgers University **New Brunswick, NJ**
Ph.D. Physics *January 2021*

University of Surrey **Surrey, United Kingdom**
MPhys, Physics with nuclear astrophysics *May 2016*