Brian O. Cruz Rodriguez

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OBJECTIVE

I am a physicist with an interest in particle physics, astrophysics, and astronomy, looking for job opportunities in these areas for software development and data analysis.

SKILLS

- Problem solving
- multi-tasking
- team-oriented
- communication skills
- programming
- debugging

RESEARCH EXPERIENCE

Fall 2019 - present

Experimental particle physics, CMS Experiment Collaboration from CERN, supervised by Dr. Sudhir Malik

RESEARCH FELLOWSHIP

January - June 2021

Awarded $5,000.00 by IRIS-HEP Fellowship for "Translating analyses into prototype analysis systems" project, mentored by Dr. Jim Pivarski (Computational Physicist at Princeton University)

CONFERENCES and WORKSHOPS

April 2022 - PRISM-JMT conference at University of Puerto Rico - Humacao

- Presented at-the-time results of the physics parameter studies of the Geant4 CMS simulation software.

August 2021 - New Perspective (virtual) conference 2021 presentation, by Fermilab

- Presented my "Translating analyses into prototype analysis systems" IRIS-HEP project results to the Fermilab research community.

February 2021 - Github CI/CD workshop, by HSF and IRIS-HEP

- Continuous Integration and Continuous Delivery/Deployment training using Github Actions to automatically build and test codebases.

October 2020 - Machine Learning for Science Hackathon Competition participation, by Dr. Sergie Glyzer

- Using machine learning and deep learning to detect potential Higgs signal from one of the background processes that mimics it.

September 2020 - CMS Open Data workshop offered by Fermilab LPC

- Workshop to get hands-on experience on scouting CERN's open data and using software tools such as a virtual machine to run an analysis of the data.

August 2020 - Virtual C++ / Standard Template Library class given by Glenn Downing, offered by Fermilab

- Class about the syntax and semantics of C++ and the Standard Template Library.

June - July 2020 - CMS Data Analysis School

- Using CMSSW on a bash shell and software tools such as ROOT to analyze CMS open data.

November 2019 – PhysCon 2019 conference

- Poster presentation about the outreach activities done by the many physics-related associations from the University of Puerto Rico - Mayagüez

OUTREACH

February 2021 - Virtual Machine Learning Basics for K-12 STEM Teachers workshop

- Taught basic python tools using a Google Colab notebook to better understand the taught Machine Learning tools: data wrangling, and linear and multilinear regression.

July 2020 - Virtual outreach workshop to teach python coding to K-12 STEM teachers using Google Colab Notebooks

- Taught Markdown and LaTeX syntax and basic python to help them play with the code of four provided notebooks: to study the Higgs-to-four-lepton decay analysis using 2011-2012 data from CERN, to calculate the invariant mass, to measure air pressure, and to plot heat maps.

AWARDS

November 2019 - PhysCon HBCU/MSI Travel Award

- Travel award for undergraduate students from Historically Black College or University, or a Minority-Serving Institution to present a poster at the conference.

EDUCATION

Bachelor of Science in Physics – B.S., Physics
University of Puerto Rico - Mayaguez
June 2022

ADDITIONAL INFORMATION

Fluent in English and Spanish
German limited working proficiency
Experienced with Python and C++ programming languages
Comfortable with version control using Git/Github
Comfortable with Linux commands