OMB No. 0925-0001 and 0925-0002 (Rev. 03/2020 Approved Through 02/28/2023)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.

Follow this format for each person. DO NOT EXCEED FIVE PAGES.

|  |
| --- |
| NAME: Alonzi, Loreto Peter |
| eRA COMMONS USER NAME (credential, e.g., agency login): ALONZIPETER |
| POSITION TITLE: Project Manager and Data Scientist |

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

|  |  |  |  |
| --- | --- | --- | --- |
| INSTITUTION AND LOCATION | DEGREE (if applicable) | END DATE MM/YYYY | FIELD OF STUDY |
| The College of William and Mary, Williamsburg, VA | BS | 05/2005 | Physics |
| The University of Virginia, Charlottesville, VA | MA | 05/2007 | Physics |
| The University of Virginia, Charlottesville, VA | PhD | 05/2012 | Physics |
| Center for Experimental Nuclear Physics and Astrophysics, University of Washington, Seattle, WA | Postdoc | 09/2014 | Physics |

### A. Personal Statement

I am a particle physicist by training having researched with several collaborations at laboratories in North America and Europe. My last appointment in physics was a postdoctoral position at the University of Washington. I grew to find that the interdisciplinary application of physics analysis methods to be a passion and have subsequently joined the Data Science field at the University of Virginia. I am involved with one physics project in the area of nuclear physics that is looking to bring in machine learning and visualization techniques from the Data Science domain. Another project involves looking at the intersection of mental health and the criminal justice system. That project works with Systems Engineers and through it I have developed a good working relationship with that discipline. In addition, this project will also be enhanced by my extensive knowledge of monte carlo techniques and simulation experience. Given the nature of the dataset, evaluation of the uncertainty of model predictions will require techniques such as bootstrapping or other techniques.

My role in this project is twofold. The first part focuses on the data, including management, cleaning, analytics, and analysis. The second focuses on project management and in particular management/advising of the students working on the project. I have served in this capacity for four Systems Engineering capstone projects in the past and several through the School of Data Science. In particular my strength in project management is bolstered by being earlier in my career and better able to place myself in the mindset of the students. I have found that projects where the students get different profiles from their advisers are more productive and that the students are better served.

### B. Positions and Honors

Positions and Employment

|  |  |
| --- | --- |
| 20012 - 2014 | Post-Doc, Center for Experimental Nuclear Physics and Astrophysics, University of Washington, Seattle, WA |
| 2014 - 2018 | Data Scientist, Library, University of Virginia, Charlottesville, VA |
| 2017 - | Data Scientist, DSI / School of Data Science, University of Virginia, Charlottesville, VA |

Other Experience and Professional Memberships

|  |  |
| --- | --- |
| 2007 - | NPDGamma Collaboration |
| 2007 - | Nab Collaboration |
| 2007 - | PEN Collaboration |
| 2012 - 2016 | New Muon g-2 Collaboration |
| 2015 - | Mental Health and Criminal Justice System Collaboration (UVA Systems Department) |
| 2005 - 2017 | Member, American Physical Society |
| 2019 - | Center for Nuclear Femtography / UVA Institute for Wigner Imaging |

Honors

|  |  |
| --- | --- |
| 1999 | Eagle Scout, Boy Scouts of America |
| 2004 | Vigil Honor, Order of the Arrow |
| 2005 | Magna Cum Laude, The College of William and Mary |

### C. Contribution to Science

1. Precision Measurement of Fundamental Physics

The precision or intensity frontier of Physics focuses on inferring underlying physics from indirect measurements. In these experiments, measurements of the highest precision possible are conducted and rely on advanced hardware as well as analysis. At every step of the process great care must be taken to ensure that as much information is extracted as possible with as little bias as possible.

Paper keywords: fundamental physics, new physics, standard model, supersymmetry

* 1. D. Blyth, et al. First Observation of P-odd gamma Asymmetry in Polarized Neutron Capture on Hydrogen (NPDGamma Collaboration) Phys. Rev. Lett. 121, 242002 (2018)
  2. D. Pocanic, et al. PEN: a low energy test of lepton, ***PoS HQL*** 2016 (2017)
  3. Muon g-2 collaboration, The Measurement of the Anomalous Magnetic Moment of the Muon at, ***J.Phys.Chem.Ref.Data*** 44 (2015) no.3, 031211

1. Nuclear Physics Detector Technology Methods

Typically, one of the main drivers in the advancement of physics is the technical ability to make novel measurements (another is political will). The field of Nuclear physics focuses on several categories of detector technology and the electronics necessary to read out their signals. The standard goal is to understand the types of particles observed and their energy, momentum, and timing. Going one level deeper these break down into different categories: one approach is to convert the energy to light radiators/scintillators (a,b), the other is to sample the particle interaction with fields or matter (c).

Paper keywords: calorimeter, SiPM, APD, LeadFlouride, PbF2, spectrometer, magnet

* 1. L.P.Alonzi, et al. the calorimeter system of the new muon g-2 experiment at, *Nucl.Instrum.Meth. A*} 824 (2016) 718-720
  2. A.T. Fienberg, et al. Studies of an array of PbF2 Cherenkov crystals with large-area SiPM, *Nucl.Instrum.Meth. A*} 783 12-21 (2015)
  3. D. Po\v{c}ani\'c, et al. ``Nab: Measurement Principles, Apparatus and Uncertainties'', { {*Nucl.Instrum.Meth. A*} 611, 211-215} (2009)

1. Mental Health and Criminal Justice System Operations

The local community in Charlottesville and the surrounding counties have establish an Evidence Based Decision Making Policy Team (EBDM). One area of focus is the intersection of mental health and the criminal justice system. This effort involves the integration of identified data sets and determining linkage between them. This includes data from jails, community service boards, and many other partners. Products from this work so far include the establishment of a Therapeutic Docket for mental health (b).

Paper keywords: crime linkage, record linkage, mental health, jail, community service board

* 1. H. Braham, et al. Linkages *Between Community Mental Health Services, Homelessness, and Inmates and Probationers with Severe Mental Illness: An Evidence-Based Assessment. 2020 Systems and Information Engineering Design Symposium (SIEDS)*, Charlottesville, VA, USA, 2020, pp. 1-6, doi: 10.1109/SIEDS49339.2020.9106666.

1. <http://dls.virginia.gov/groups/mhs/ParticipantHandbook.pdf>
2. <https://dailyprogress.com/news/local/new-docket-aims-to-divert-the-mentally-ill-from-jail-to-treatment/article_b0a6cd50-620c-11e8-9741-fb5e935dcfd0.html>

Complete List of Published Work: <https://scholar.google.com/citations?view_op=list_works&hl=en&user=71KbB0QAAAAJ>

### D. Additional Information: Research Support and/or Scholastic Performance

Current

School of Data Science, University of Virginia, Staff Position

Nov 2018 - Present

Role: University Staff Data Scientist

Southeastern Universities Research Association, Inc. Grant Agreement No. C2020-FEMT-006-05

06/01/20-08/31/20

SIWIF: Summer Institute on Wigner Imaging and Femtography

Role: co-PI

Completed (last 3 years only)

Southeastern Universities Research Association, Inc. Grant Agreement No. C2019-FEMT-002-04

06/01/19-08/31/19

Summer Institute for Wigner Imaging

Role: co-PI