Tamiro Villazon

Data Scientist / Quantum Physicist
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Skills

Analytical: Expert (6+ yrs) in data analysis, mathematical modeling, linear algebra, calculus, probability, statistics
Programming: Proficient in Python (3+ yrs), Matlab (3+ yrs), Mathematica (3+ yrs), Java (1+ yrs), C++ (1+ yrs)
Tools: Pandas, Numpy, Scipy, Scikit Learn, Beautiful Soup, Matplotlib, Seaborn, LAPACK, Eviews, Git, Bash, Dash
Communication: Experienced (6+ yrs) presenting at professional conferences, seminars, classrooms

Education

Ph.D. in Physics | Boston University | Boston, MA *Expected May 2020*
B.A. in Physics & Mathematics | Summa Cum Laude | Goucher College | Baltimore, MD *Jan 2010 - Dec 2013*

Projects

Recommender System for Public Address Speakers | Independent Project *Jan 2020 - Present*
- Devised system to rank and recommend speaker products by implementing Euclidean and cosine similarity measures to compare product specifications with user preferences.
- Scraped data from Guitar Center website using Beautiful Soup, assembled and cleaned data frames using Pandas, visualized data with Matplotlib, and calculated recommendation rankings with Numpy.

Unsupervised Learning of Quantum States in Diamond | Boston University *Oct 2019 - Present*
- Identified 2 new classes of quantum states in diamond models by performing unsupervised machine learning.
- Applied K-means clustering with Scikit Learn and validated using silhouette width and Dunn Index.

Impact of Weather on Business Engagement | Independent Project *Dec 2019 - Jan 2020*
- Built a web app to analyze impact of weather on Yelp check-in counts for 50 top Pittsburgh businesses.
- Quantified correlations between weather and check-in activity using regression coefficients.
- Created interactive webpage with Dash, and deployed with Heroku.

Quantum Data Managing System | Boston University *Jul 2019 - Jan 2020*
- Constructed a management system to set up, run, and organize terabytes of simulation data on high-dimensional quantum systems into data frames, and executed on the Boston University Shared Computer Cluster.

Efficient Heat Transfer with Fast-Forward Driving (Physical Review A) | Boston University *Jul 2017 - Jul 2019*
- Developed protocols for fast and efficient heat transfer between a quantum system and its environment.
- Designed a quantum heat engine operating at efficiencies above 90% of physical limit, and with 2 orders of magnitude improvement in power output over conventional designs.

Experience

Research Fellow | Boston University *Aug 2017 - Present*
- Conducted research and collaborated with 6 teams of experimental and theoretical condensed matter physicists.
- Authored and published in peer-reviewed journals, and presented at 6 international conferences.

Teaching Fellow | Boston University *Aug 2015 - Jul 2017*
- Instructed 8 physics courses for 400+ physics, math, engineering, chemistry, biology, and medical science students.
- Mentored 10+ physics students, and tutored 40+ Navy ROTC students in physics and mathematics.

Select Courses

Data Science, Data Visualization, Text Mining (Coursera Michigan 2020), Machine Learning (Coursera Stanford 2019)

Awards

Teaching Fellow of the Year (Boston University 2017), Dean's Fellowship (Boston University 2014)