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# 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

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## 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*

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## Projects

**Recommender System for Public Address Speakers | Independent Project**

*Jan 2019 - 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**

*July 2017 - July 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.
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## 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 - July 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.
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## Select Courses

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

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## Awards

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

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