Alfredo González-Espinoza, PhD

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Summary

Data Scientist with a background in Chemistry, Physics, Statistics, and Machine Learning. Demonstrated expertise in solving complex interdisciplinary problems and delivering innovative solutions. Passionate about data-oriented research and product development that contribute to generating a positive impact in society.

Strengths & Skills

Creative thinker and problem solver with a passion for intellectual curiosity. Fast learner with a strong drive for continuous growth. Exceptional project management abilities and effective communication skills across diverse teams. Proficient in translating technical concepts into practical analogies. Bilingual in English and Spanish, with strong verbal communication skills. Collaborative team player and attentive listener.

Methodological expertise:
Complex Systems, Time Series Analysis, Stochastic Simulations, Network/Graph Theory, Information Theory, Hypothesis Testing, A/B Testing, Machine Learning, Bayesian Statistics/Modeling, Statistical Inference, Natural Language Processing.

Technical Skills:
Languages: Julia (Flux, DataFrames, Plots, Turing), Python (Pandas, Numpy, Matplotlib, Keras, TensorFlow, PyTorch, Scikit-learn, NLTK, spaCy, scipy). Other: Linux, Bash, LaTeX, SSH, Git, SQLite, PostgreSQL, JSON, AWS, GCP, Spark, Docker, Jupyter notebook, Pluto notebook.

Work Experience

Postdoctoral Researcher, University of Pennsylvania, PA, USA. 2019 - 2022

I led a research project in the mathematical biology group, focusing on quantifying innovation in music and understanding people's taste in music. With potential impact for music characterization, music generation and music recommendation systems. I collected, curated and processed data, designed models and conduct experiments, collected, analyzed and write results for publication. Research findings were featured in the prestigious journal Scientific American.

Postdoctoral Researcher, National Institute of Genomic Medicine, México. 2018 - 2019

Developed the methodology and analysis to understand the different types of malignancy in breast cancer and contribute to potential treatments for the disease. I developed a novel hybrid data-driven clustering algorithm to identify groups of genes relevant to cancer, implemented statistical analysis and write results for publication.

Other Experience/Projects

I have a long list of diverse projects I have worked on in academic and non-academic environments. Most projects are data-oriented. Listed below a few of them.

- Conducted data analysis on soccer GPS tracking data from a professional team in Mexico
- Built and analyzed knowledge graphs of news articles using NLP and semantic graph techniques
- Developed an LSTM model for sentiment analysis of tweets in Spanish
- VADER sentiment analysis and topic modeling to characterize pop songs.
- Developed predictive models for wine properties and quality using ANN

Education

2014 - 2018 PhD in Science (Physics) **Universidad Autónoma del Estado de Morelos, México**
Graduated with honors
2011 - 2014 Master of Science (Physics) **Universidad Autónoma del Estado de Morelos**
2005 - 2011 Bachelor of Science (Chemistry) **Universidad Autónoma del Estado de Morelos**

Awards & Selected Publications

National scholarship for graduate studies (PhD) fully funded by CoNaCyT
National scholarship for graduate studies (Master degree) fully funded by CoNaCyT
Alfredo González-Espinoza, Gustavo Martínez-Mekler, and Lucas Lacasa. (2020) Arrow of time across five centuries of classical music. *Phys. Rev. Research*, 2:033166.

Interests & Activities

Amateur cellist/musician, Photography, Soccer, Videogames, Continuos learning, Science Communication, Neuroscience, Urban planning