Pablo G. **Romano**

Data Scientist

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Summary

Data Scientist, PhD Physical Chemistry, Texan

Skills

Programming	Python, Fortran, R, Matlab, Cython SQL, Bash
Data Analysis Tools	NumPy, Scikit-Learn, SciPy, Pandas, spaCy, NLTK, Matplotlib, ggplot2
Statistical Methods	Markov Chains, Mixture Models, Regression (Linear and Logistic), kNN
Unsupervised Learning	Clustering (K-Means, K-Medoids, Fuzzy C-Means, and Ward), PCA, Time-lagged ICA
Supervised Learning	Random Forest, Naive Bayes, and SVM Classification
Natural Language Processing	Topic Modeling (NMF, LDA), Text Processing, tf-idf, word2vec, doc2vec

Research Experience

Insight Data Science

Remote

Fellow

Jan. 2018 - Present

- Implemented a rating system to score dogs based on the similarity between searched personalities and pet description using NMF topic modeling and word2vec.
- Trained and validated Naïve Bayes classifier to predict whether sentences described pets for adoption.
- Queried, processed, and stored pet-descriptions from Petfinder's RESTful API using NLTK, spaCy, pandas, and PostgreSQL.
- Built interactive front-end web-app to select features in search queries using Bootstrap and Flask.

University of Oregon

Eugene, Oregon

Graduate Research Fellow

Sep. 2012 - Sep. 2017

- Predicted macroscopic conformational states from 100+ GB DNA simulations using k-means and Ward clustering.
- Evaluated kinetic mechanisms in DNA un-stacking by modeling inter-state transitions as a Markov chain and analyzing through transition path theory.
- Estimated relaxation timescales for DNA un-stacking by spectral decomposition of transition likelihoods.
- Coarse-grained atomistic representation from 1000+ atoms to <10 features using PCA and time-lagged ICA.
- Designed and implemented "Gradient Adaptive Decomposition" algorithm, improving predictive accuracy of kinetic classification by over 20% using NumPy, SciPy, and Scikit-learn.
- Facilitated training of incoming undergraduate and graduate students in Bash shell, coding with Python and Fortran, and molecular dynamics simulations.

St. Edward's University

Austin, Texas

Research Assistant

Jan. 2009 - Jun. 2012

- Collaborated between synthetic and computational groups in the design of novel inhibitors targeting precursors to Rheumatoid Arthritis.
- Validated the efficacy of inhibitors through docking studies to reduce the number of synthesized compounds from 1000+ to 100.

Education

Sep. 2012 - Sep. 2017 **Physical Chemistry**, PhD — *University Of Oregon*

Aug. 2008 - May. 2012 **Chemistry**, BS — *St. Edward's University*

Projects

LaTeX CV

Modification of the posquit0 Awesome CV template. Includes more classes, and modified design. They made a great template!

Publications

The Gradient Adaptive Decomposition (GRAD) Method: Optimized Refinement Along Macrostate Borders in Markov State Models

PG Romano, MG Guenza — *J. Chem. Info. & Mod.*

Acetylenic inhibitors of ADAM10 and ADAM17: In silico analysis of potency and selectivity

EF Healy, PG Romano, M Mejia, G Lindfors III — *J. Mol. Graph. & Model.*

Presentation & Workshops

Chiral Pathways in DNA dinucleotides using gradient optimized refinement along metastable borders — *New Orleans, Louisiana*

National American Physical Society Meeting — *Mar. 2017*

Presented novel method for improving accuracy by greater than 20% in Markov models of macromolecular simulation data.

CECAM Macromolecular Simulation Software Workshop — *Jülich, Germany*

Centre Européen de Calcul Atomique et Moléculaire — *Oct. 2015*

Attended workshop series designed to improve computational methods and software design aimed at open and reproducible science.

Analyzing Small DNA Constructs via a Chromophore Model within the Point Dipole Approximation. — *Baltimore, Maryland*

Biophysical Society: National Meeting — *Mar. 2015*

Presented structural model of organic chromophores to reproduce, with 95% confidence, experimental results of Adenine dinucleotides.

Acetylenic inhibitors of ADAM10 and ADAM17: In silico analysis of potency and selectivity — *New Orleans, Louisiana*

American Chemical Society, Southwest Regional Meeting — *Sep. 2012*

Presented talk on the analysis of novel acetylenic TACE inhibitors.