Patrick Finnerty

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Experience

Rare Genetic Disease Investigation **Oct 2022 – July 2023**

Bioinformatics Software Engineer *Remote*

- **Project Lead and Grant Proposal:** Led and initiated investigation to estimate population prevalence of a rare genetic disease, collaborated with field experts to write a comprehensive grant proposal
- **Variant Annotation Pipeline:** Implemented variant annotation pipeline for 3500 mutations: sourcing from genetic database, generated mutant sequences, structures with AlphaFold, predicted protein-ligand and protein-protein interactions

Eli Lilly, Bioproduct Research & Development **June 2018 – September 2020**

Scientist *Indianapolis, Indiana*

- **Technical Documentation:** Authored and evaluated technical documents such as process development and validation reports, SOPs, and lab notebooks, ensuring FDA regulatory compliance, 150+ documents delivered in 2 year tenure
- **Data Analysis and Modeling:** Employed Excel and PowerBI to analyze assay data, created predictive models and dashboards, automated 40% of data processing workload
- **Website Development:** Led creation of a collaborative department SharePoint website, enhancing data access and tool organization for 50 stakeholders
- **Microscopy SME:** Developed SOP, conducted method development, served as subject matter expert, and managed vendor relationship for flow imaging microscopy instrument
- **Formulation Experiments:** Designed experiments to characterize antibody formulations, determine degradation susceptibility, and optimize stability strategies

Research & Projects

Master's Thesis

- Devised adaptable pipeline for protein structural data using Python and Chimera, informed by stakeholder and peer input. Automated data extraction and reduced workload by 50%
- Integrated diverse data from 9 sources, data visualization and analysis with R, and automated reporting with Rmarkdown
- Enhanced Chimera software with high-throughput feature extraction, optimizing data retrieval efficiency

Web App Development

- Developed website presenting portfolio work, apps, notebooks, and research linked from this resume
- Managed CI/CD and version control, updating and deploying the static site to Vercel upon Git update

Machine Learning and Statistical Analysis Projects

- Identified 100 prime candidates from 6,000 samples of high-throughput screening data
- Multi-class classification of 1,500,000 small molecules using SMILES, RDKit/DeepChem QSAR data

Education

Universitat Autònoma de Barcelona **2020 – 2021**

M.Sc. Bioinformatics (Thesis: Analysis of Hemoprotein Binding Sites) *Barcelona, Spain*

University of Arizona **2014 – 2018**

B.Sc. Chemical Engineering *Tucson, AZ*

B.Sc. Molecular and Cellular Biology

B.A. Biochemistry

Technical Skills

Lab Techniques	HPLC, pH, flow imaging microscopy/particle analysis, HIAC particle counter, UV-Vis spectrophotometry, IR spectroscopy, gas chromatography, osmometry, rheometry, bacterial and mammalian cell culture, centrifugation, aseptic technique/fume hood/biosafety cabinet
Statistics	PCA/MDS, ANOVA, SVM, GNB, linear/logistic regression, clustering and multi-class classification, time-series analysis, signal processing, detrending
Data Visualization	Streamlit, Plotly/Dash, Quarto, matplotlib, seaborn; Rmarkdown, revealjs, ggplot2
Databases	SQL, GraphQL, MongoDB, S3, Cloud Storage, Hugging Face Dataset
Programming Languages	Python, JavaScript/TypeScript, R, Bash/Shell, LaTeX
Interests	Cooking, reading, salsa dancing, gaming, learning piano/surfing, skateboarding
Languages	English, Spanish