Jaime Salvador López Viveros

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Portfolio: https://jaime-lopez-personal-portfolio.vercel.app

Profile

Mathematician with a Master's degree in Mathematical Sciences and a strong foundation in applied mathematics, computer science, and data analysis. Possesses hands-on experience in developing computational tools, managing large datasets, and implementing algorithms using Python, R, SQL, and C++. Demonstrated ability to communicate technical findings and collaborate effectively within multidisciplinary teams. Passionate about applying programming and analytical skills to solve complex problems in industry settings.

Education

Master's in Mathematical Sciences, Specialization in Biomathematics *2023 - 2025*
Universidad Nacional Autónoma de México (UNAM)

- Thesis: Detection of Recombination Events using Topological Data Analysis. Developed computational tools for complex data analysis and 3D visualization, enabling the identification of patterns relevant to evolutionary trends.
- GPA: 9.1/10.0

Diploma in Statistical Techniques and Data Mining *2022*
Faculty of Higher Studies Acatlán, UNAM

- Developed skills in predictive and descriptive data analysis, statistical modeling, and data mining methodologies.

Bachelor's Degree in Applied Mathematics and Computing *2018 - 2022*
Faculty of Higher Studies Acatlán, UNAM

- Specialization in Advanced Programming, Numerical Analysis, and Mathematical Modeling.
- Member of FES Acatlán's competitive algorithms team (2019 - 2020).

Technical Experience

Data Coordinator & Analyst - CAMDA Challenge: AMR Prediction *2024*
UNAM - Multidisciplinary Team

- Coordinated data processing for 7,772 samples using Python/Bash and managed analysis pipelines (assembly, annotation, QC) in Linux, collaborating effectively within a 10+ member multidisciplinary team.
- Contributed analytical insights and modeling strategies influencing the team's application of ML techniques (incl. Logistic Regression w/ L1); the team achieved F1 scores of 0.76-0.96 and secured a 3rd place finish.

Master's Thesis Research - Viral Recombination Analysis using TDA *2023 - 2025*
UNAM

- Developed and implemented a 3D visualization tool (Python, Plotly, Numpy, Ipywidgets) to analyze complex dataset behavior in virus via Topological Data Analysis, enabling the identification of significant structural patterns.

- Enhanced understanding of TDA applicability by creating simulations, demonstrating its ability to distinguish different data structures.

Project: Breast Cancer Subtype Classification using Gene Expression *Personal Project Based on TCGA Data*

- Implemented an end-to-end machine learning workflow (Python, Pandas, Scikit-learn) to classify cancer subtypes from TCGA mRNA expression data.
- Improved model performance for minority classes by over 15% (F1-score) using techniques like SMOTE for class imbalance and SelectKBest for feature selection within a RandomForestClassifier.

Project: Web Development Portfolio *Personal Project (See Portfolio link above)*

- Developed full-stack projects showcasing front-end interactivity (JavaScript apps, API integration) and back-end handling (PHP, MySQL).
- Implemented various interactive data visualizations connecting to a database backend, using libraries like D3.js, Google Charts, and CanvasJS.

Skills

Programming Languages: Python (NumPy, Pandas, Scikit-learn), R, SQL, C/C++, Bash, JavaScript; Familiar with Java, PHP.
Developer Tools & Platforms: Git/GitHub, Docker, Linux Environment, AWS (Basic).
Data Visualization: Plotly, Matplotlib, D3.js, Google Charts, CanvasJS.
Web Technologies: API Integration, HTML, CSS.

Certifications

Docker Foundations Professional Certificate *Docker, Inc (Apr 2025)*
AWS Essential Training for Developers *LinkedIn Learning (Apr 2025)*
SQL (Intermediate) Certificate *HackerRank (Apr 2025)*
Data Science Foundations: Fundamentals *LinkedIn Learning (Apr 2025)*

Publications & Presentations

Intelligent Systems for Molecular Biology (ISMB) *Montreal, Canada, 2024*

- Oral Presentation: "Machine Learning Models for AMR Prediction" (Received Honorable Mention).
- Poster Presentation: "Investigating Viral Recombination Patterns using Topological Data Analysis".

Professional Activities

Assistant Instructor - The Carpentries Workshop *CCM, UNAM (2024)*

- Taught Data Analysis fundamentals (Python, Bash, Git) to 20+ researchers, improving their data analysis workflows.

Member and Organizer - RSG-Mexico (ISCB Regional Student Group) *2024 - Present*

- Organized technical workshops and talks for the bioinformatics student community, coordinating guest speakers and managing event promotion.

Languages

Spanish: Native
English: Advanced (C1)
French: Intermediate (B2)
German: Basic (A2)
Italian: Basic (B1)