RODRIGO ADOLFO REYES FEREGRINO

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EDUCATION

Honours Bachelor of Science + PEY Co-op, University of Toronto   Expected graduation May 2026

- Double major: Computer Science and Chemistry | minor: Philosophy | **Entrance Scholarship.**
- Related coursework: **software design**, software tools and systems programming, enriched data structures, **algorithm design**, analysis and complexity, introduction to Machine Learning, Computational Chemistry.

SKILLS

Technical Skills: **Programming languages**: Python, Java, C, C++ | **Data analysis and visualization**: Numpy, Pandas, COBRApy, SciPy, Scikit-learn, Plotly, Matplotlib, Seaborn | **Other tools:** Docker, Conda, Unix, Git.
Languages: Spanish(native), English(C2 - Proficient), and German(C1 - Fluent)

EXPERIENCE

Co-op Student: Bioinformatics software engineer   May 2024 - April 2025
Sanofi Pasteur Canada - R&D in Molecular Biology Centre   *Toronto, Canada*

- Analyze **large genomics datasets**, including high-throughput sequencing data (up to 4.5 BILLION reads of DNA fragments per batch) by harnessing Linux scripting, Python and sequence alignment **algorithms**.
- Actively participate in the development, testing, and optimization of data processing pipelines and internal software tools, deployed in clusters running in hybrid **cloud-computing** platforms.
- My analysis produced valuable insight, impacting over 500 million customers in 150+ countries.

Dry Lab Lead, iGEM Competition   March 2023 - January 2024
iGEM Toronto group, University of Toronto   *Toronto, Canada*

- Led a sub-team of 8 members in the design and implementation of a **metabolic engineering research** project, presented at the International Genetically Engineered Machine (iGEM) competition. See project webpage
- Utilized genome-scale metabolic models and linear programming optimization to predict genetic modifications that enhance the efficiency of bacterial metabolic networks. Evaluated over 12,000 genetic variations.
- Won **gold medal** and prize for **best computational model** out of over 400 teams from top universities worldwide.

Summer Researcher: Quantum Computing   May 2024 - ongoing
University of Toronto   *Toronto, Canada*

- Investigate - under Professor Nathan Wiebe - applications of quantum computing to chemical systems.
- Focus on quantum algorithms for Hamiltonian simulation, such as QDRIFT, Phase-estimation, Trotter-Suzuki decompositions, Linear Combination Of Unitaries and truncated Taylor series.

Database developer   October 2023 - April 2024
Canadian Statistical Sciences Institute (CANSSI) Ontario   *Toronto, Canada*

- Capture, enter and analyze data related to CANSSI Ontario operations and events by harnessing existing software (FileMaker, Alchemer, MySQL) as well as creating my own tools with diverse Python libraries.
- Improved systems and pipelines for database management, as well as for data cleaning and curation, as measured by a 40% decrease in time taken to generate the annual reports.

PROJECTS

News article popularity predictor (ML-powered) web app   Feb 2024

- **Full-stack** web app developed during a **hackathon**, for predicting news article popularity .Extracts 58 features through web-scraping, including **sentiment analysis using NLP**, achieving over 70% validation accuracy.
- Trained and compared different **Machine-Learning models** (decision tree, linear regression, and random forest regression) on 40,000 data points, using the number of times shared as target vector. see slideshow

Open-source computational tool for bacterial strain design: COBRA-FSEOF   Jan 2024

- Developed a COBRApy implementation of the FSEOF (Flux Scanning based on Enforced Objective Flux) algorithm, based on the work of Choi et al. (2010). Check out our GitHub: igem-toronto/cobra-fseof

Time management software aimed at students   September - December 2022

- Built Calendar-like tool in Java with a team, aimed at the needs of university students -allows users to account for commute time, track studying habits, set goals, etc. It has over 100 different classes and 7 different use cases.

AWARDS

- Summer Undergraduate Data Science (SUDS) research scholarship (7,200 dollars) June 2024

- **Gold Medal**, Best Model Award, and Nominations for Best Climate Crisis Project, Wiki, Integrated Human Practices, Entrepreneurship, and Presentation, iGEM October 2023

- **Gold Medal** and Nomination for Best Conservation Project ("On-site early diagnostic tool for Oak Wilt disease") , iGEM October 2022