

Saul Vega Saucedo

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EDUCATION

Massachusetts Institute of Technology (MIT)

Cambridge, MA

Candidate for B.S. in Computer Science and Engineering

September 2020 – May 2024

GPA: 4.7 / 5.0

Relevant Coursework: Modeling with Machine Learning, Probability & Random Variables, Software Construction, Linear Algebra, Design & Analysis of Algorithms, OS Engineering

EXPERIENCE

MIT – Coley Research Group

Undergraduate Researcher

Valorization of bio-feedstock using computer-aided retrosynthesis

May 2021 – May 2022

- Simulated retrosynthetic and forward steps of chemical reactions to devise synthetic routes from proposed feedstock mentioned in the literature.
- Analyzed existing literature to identify potential sources of renewable feedstock.
- Examined the results of a tree builder search for over 2000 therapeutic molecules.
- Developed a graph model representation to analyze and visualize the renewability of chemical reactions.

MIT – Kellis Lab

Undergraduate Researcher

Advanced Undergraduate Research Opportunities Program

Imputation of absolute RNA counts from scRNA-seq performed on neurons

June 2022 – May 2023

- Designed a pipeline to process single-cell RNA sequencing (scRNA-seq) data for imputation and deployed the tool in Docker for future collaborative efforts.
- Developed a metric to compare sampling distributions across different modalities to mitigate batch effects, such as capture rate.
- Investigated the effects of imputation techniques on addressing missing gene expression values in scRNA-seq matrices (e.g., non-negative matrix factorization, collaborative filtering, kNN-imputation, etc.).
- Implemented down-sampling and introduced noise to simulate various scRNA-seq capture methods.

Flatiron Health

SWE Intern

Developing Molecular Profiling Homepage in OncoEMR

June 2023 – August 2023

- Designed and structured molecular profiling reports for patient data.
- Engineered a robust data integration framework:
 - Designed the **Lab Agnostic Molecular Profiling Database (LAMP)** API and its endpoints using AWS Lambda serverless architecture.
 - Integrated endpoints in **OncoEMR** to retrieve structured molecular reports from **LAMP**.
- Collaborated closely with a health informatician to ensure data accuracy, identify positive findings, and modify UI design to enhance user-friendliness.

ACTIVITIES & SKILLS

SSP Connect, Mentor

September 2020 – January 2023

MIT Biotech Group, Mentorship Associate

October 2021 – September 2022

MIT ESP HSSP, Teacher for Intro to CS

June 2022 – August 2022

Intro to Machine Learning, Lab Assistant

February 2023 – May 2023

Biliteracy Award (Spanish)

May 2020

Skills: AWS, GCP, C, C#, C++, Python, JavaScript, TypeScript, Julia, R, Jupyter, x86 assembly, Docker, UNIX, Machine Learning, Informatics, Probability Simulations, Full-Stack Development