

Jacob T. Emmerson

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Education

UNIVERSITY OF PITTSBURGH

B.Sc. Computer Science GPA: 3.76/4.0

Applied Statistics Minor & Certificate in Quantum Computing

Notable Coursework: Intro to Machine Learning (CS1675); Foundations of Artificial Intelligence (CS2710)

Pittsburgh, PA

April ~2024

Experience

SIGNATURE DIAGNOSTICS

Bioinformatics Developer Intern

Pittsburgh, PA

August 2022 - Present

- Developed lightweight models for the classification of fetal aneuploidies based on methylation signatures found in maternal plasma (Naive Bayes, SVM)
- Utilized compositional statistics to aid in the deconvolution of tissues and blood based on methylation patterns.
- Advised by Dr. Paul R. Cohen

UNIVERSITY OF PITTSBURGH

Research Assistant

Pittsburgh, PA

December 2022 - Present

- Analyzed methylation levels of tissue samples from endometriosis patients and infants diagnosed with NEC under Dr. David G. Peters.

Notable Projects

Multinomial Naive Bayes Classifier

February 2023

Python

- Implemented a unique feature engineering technique through ratios to reduce dependencies and variance between features (*paper on the technique in progress...*)
- Demonstrated the model's ability to classify maternal conditions as well as fetal aneuploidies with >95% accuracy.

Quantum Hadamard Edge Detector

March 2023

Qiskit

- Created an edge detector for 258 x 258 QPIE encoded images utilizing a variant of QHED.
- Documented the theoretical speedups of a quantum algorithm compared to the classical Canny Edge Detector algorithm and discussed the feasibility of quantum algorithms in practice.

Extracurriculars

RAINBOW ALLIANCE

Pittsburgh, PA

Board Member, Communications

September 2021 - April 2022

- Oversaw the social media platforms for the primary hub dedicated to the LGBTQIA+ community on the University of Pittsburgh's campus.
- Maintained a social media presence of 300+ members as well as 1000+ followers.

STUDENT GOVERNMENT

Pittsburgh, PA

Voting Member, Judicial Committee

April 2022 - February 2023

- Assess issues and propose revisions to the governing code pertaining to all university-wide organizations and clubs.

Skills & Interests

Programming: Python; R; C++; Java; HTML & CSS; Qiskit

Technical: Linux; Git; Multithreaded Programming

Interests: Coffee; Video Essays; Music