

Sonia Sharapova

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EDUCATION

McGill University, Montreal, QC, Canada

Undergraduate Student, Major in Computer Science and Biology, August 2019 – May 2023

EXPERIENCE

Prof. Jun Ding's Lab, McGill University

Research Intern, Full time during Summer and part-time during school year, May 2021 – Present

- Researched literature to identify most active genes in fungal infections and used my professor's Python model to correlate the mouse genome against this data. The resulting ranking of the genes can be used in treatment of fungal infections. If successful, this approach can be applied to treatment of other diseases.
- Applied feature rankings and machine learning methods to identify gene markers in breast cancer patients.
- Used scanpy, a python toolkit for analyzing single-cell gene expression, to find gene clusters and their most prominent cell types.
- Implemented a variational autoencoder from scratch with a personalized loss function using gene rankings.
- Designed the lab's webpage with HTML and Java Script.

Treehouse Childhood Cancer Initiative / University of California, Santa Cruz

Intern, June 2018 – August 2018

- Worked alongside a graduate student developing and testing a clustering algorithm to group patients by their genetic features to predict how they would react to various types of cancer therapy. This research was later used to write a research paper and compete in the Sigma Xi and Synopsys research conferences. (Mentor: Jacob Pfiel, UCSC)

Science Internship Program / University of California, Santa Cruz

Intern, June 2017 – August 2017

- Worked as an intern finding checkpoints and mutations that cancers use to avoid cell death. Analyzed the similarities between genes linked to the alternative lengthening of telomeres which leads to cancer and the driver mutations behind them. Post-processed the data to determine resulting trends. (Mentor: David Haan)

SKILLS/CLASSES/PROJECTS

- Programming: Python, C, bash, Java, LaTeX, GitHub, Scanpy, HTML
 - Coursework: Linear Algebra, Calculus, Intro to Computer Science, Intro to Software Systems, Algorithms and Data Structures, Discrete Structures, Probability, Statistics, Applied Machine Learning, Mathematical Models in Biology, Computational Biology Methods and Research, Reinforcement Learning, Computer Vision, Artificial Intelligence
- Computational biology project: Prediction of Transcription Factor Binding. Compared different machine learning techniques to predict the probability of a transcription factor binding based on DNA structural properties.

ACTIVITIES/AWARDS

- Meakins-Christie Laboratory Studentship Competition - awarded the maximum stipend for my research
- Poster presentation "Immune Cell Profiling and Clustering in Adult Melanoma Cancer" at Synopsys Science and Technology Championship 2019 and Sigma Xi Research Conference 2018
- President of the Cinema Club at McGill University
- Girl Code at Stanford (2019): A two-week intensive workshop on Java.