Sonia Sharapova

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OBJECTIVE

Graduate student looking for a Summer 2024 internship in programming, computer science research, machine learning, or high-performance computing (HPC).

EDUCATION

University of Chicago, Chicago, IL *September 2023 – March 2025 (expected)*
Master's Program in Computer Science, Specialization in High Performance Computing

McGill University, Montreal, QC, Canada *August 2019 – May 2023*
B.Sc. in Computer Science and Biology, May 2023

EXPERIENCE

Prof. Jun Ding's Lab, McGill University *May 2021 – Present*
Research Intern, Full-time during Summer and part-time during the school year

- Implemented a novel machine-learning model combining an autoencoder with a Multi-Layer Perceptron. This model was trained on genetic data from cancer patients and resulted in higher accuracies predicting patient cancer types compared to standard models. The autoencoder was trained with a custom loss function that assigned weights based on gene importance ranking, additionally resulting in gene marker identification. The model was custom-built and utilized PyTorch for training.
- Applied sensitivity analysis and hyperparameter tuning to iteratively improve training model performance.
- Used the Python toolkit Scanpy to analyze gene expression and find gene clusters alongside their most prominent cell types.
- Designed the lab's webpage using CSS, HTML, and JavaScript.
- Collaborated with other students in the lab and attended weekly lab meetings discussing modern research in the field.

Treehouse Childhood Cancer Initiative / University of California, Santa Cruz *June – August 2018*
High School Intern

- Worked alongside a graduate student in 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 Pfeil, UCSC)

Science Internship Program / University of California, Santa Cruz *June – August 2017*
High School Intern

- Worked as an intern finding checkpoints and mutations used by cancer cells to avoid cell death by analyzing the similarities between genes linked to the alternative lengthening of telomeres and the driver mutations behind them. I further processed the data to determine trends between the disease and the gene state. (Mentor: David Haan)

SKILLS/CLASSES/PROJECTS

- Programming: Python, C, Bash, Java, LaTeX, GitHub, Scanpy, HTML, CSS, JavaScript.
- Coursework: Linear Algebra, Calculus, Intro to Software Systems, Algorithms and Data Structures, Discrete Mathematics, Probability, Statistics, Applied Machine Learning, Mathematical Models in Biology, Computational Biology Methods, Reinforcement Learning, Computer Vision, Artificial Intelligence, Introduction to Unix Systems, Python Programming.

ACTIVITIES/AWARDS

- Meakins-Christie Laboratory Studentship Competition - awarded the maximum stipend for my research position.
- President of the Peel Street Cinema club at McGill University 2021-2023
- Poster presentation "Immune Cell Profiling and Clustering in Adult Melanoma Cancer" at Synopsys Science and Technology Championship 2019 and Sigma Xi Research Conference 2018
- Girl Code at Stanford (2019): A two-week intensive workshop on Java for selected students.