

# Madeline Hughes

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Github: <https://github.com/v-mahughes/>

Website: <https://v-mahughes.github.io/>

## EDUCATION

**Brown University**, Providence, RI (*grad year: 2022*)   **Majors:** Computer Science A.B. and Biology A.B.   **GPA:** 3.9/4.00

**Relevant Coursework:** (Computer Science): Deep Learning, Machine Learning, Computational Biology (Math): Quantitative Models of Biological Systems, Linear Algebra, Statistical Inference, Differential Equations (Biology): Genetics, Virology, Infectious Disease (Chemistry): Organic Chemistry (I and II), Biochemistry

**Programming Languages/Tools:** Python, R, Java, Bash (Unix shell), Pytorch, TensorFlow, Git, HTML, LaTeX, SQL

## PUBLICATIONS & PROJECTS

1. C. Nwizu, **M. Hughes**, M. Ramseier, A. Navia, A. Shalek, N. Fusi, S. Raghavan, P. Winter, A. Amini, L. Crawford. *Scalable nonparametric clustering with variable selection for single-cell RNA-seq data*. Preparing Manuscript for Publication.
2. G. Murtza, A. Jain, **M. Hughes**, T. Varatharajan, R. Singh (2021). *Investigating the Performance of Deep Learning Methods for Hi-C Resolution Improvement*. Manuscript Submitted for Publication.
3. **M. Hughes**, D. Hawkins, K. McCutcheon, A. Glick, N. Rodriguez-Sastre, and C. Bradham (2021). *A Pipeline for Constructing a 3D Coordinate Map of Primary Mesenchyme Cells in Developing Embryos*. Project presented at the Annual Biomedical Research Conference for Minority Students (ABRCMS) 2021

## AWARDS

1. Spring 2022 and Summer 2021 Brown University Undergraduate Teaching and Research Awardee for research with the Singh Lab

## RESEARCH EXPERIENCE

- BioMedical Machine Learning Team, Microsoft Research, Cambridge, MA - Research Assistant** 07/2022 - present
- Project *Ex Vivo*: collaborate with researchers at Microsoft and the Broad Institute at MIT and Harvard to develop a more comprehensive, system-level representation of tumors *ex vivo* and improve patient outcomes with precision oncology
- Singh Lab, Brown University, Providence RI - Undergraduate Research Assistant** 01/2021 - 05/2022
- Construct a graph neural network for improving the quality and interpretability of Hi-C data
  - Conduct a computational study on deep learning models that aim to improve resolution of Hi-C data
- Bradham Lab, Boston University BRITE REU, Boston, MA - Computational Biology Lab Intern** 06/2021 - 09/2021
- Implement a pipeline that constructs a 3D coordinate system onto which we can map volumetric images of primary mesenchyme cells in developing sea urchin embryos for more robust, quantitative spatial analyses
- Naik Lab, Brown University, Providence, RI - Undergraduate Research Assistant** 09/2019 - 04/2020
- Conduct a structural study on the SUMO binding orientation of Daxx SIM using NMR spectroscopy and computational tools to aid in the development of therapeutic inhibitor molecules
- Correa Lab, New England Biolabs, Ipswich, MA - Biochemistry Lab Intern** 06/2019 - 08/2019
- Execute chemical and enzymatic transformations of oligonucleotides, including their purification and analysis
- Tenen Lab, Beth Israel Deaconess Medical Center, Boston, MA - Remote Lab Intern** 06/2020 - 12/2020
- Write a literature review on Acute Myeloid Leukemia and generate an EndNote citation library

## VOLUNTEER EXPERIENCE

- Connect for Health, Providence, RI - Campus Coordinator, Leadership Team** 06/2020 - 05/2022
- Manage outreach and recruitment of student advocates at Brown University, RIC, and PC
  - Organize and lead advocate development meetings and trainings to improve advocate skills and experience
- Women in Science and Engineering, Providence, RI - Mentor** 09/2018 - 05/2022
- Mentor other undergraduate students in STEM and attend meetings and workshops to improve mentor abilities
- Connect for Health, Providence, RI - Advocate** 08/2018 - 08/2020
- Help people in Rhode Island access resources related to housing, food, healthcare, financial assistance, and other needs