

SHREYA KOCHAR

Experience

Microsoft

Incoming Explorer Program Intern (SWE + PM)

Redmond, Washington
May 2021 to Aug. 2021

- Software engineering and product management internship

Massachusetts Institute of Technology Boyden Lab

Research Assistant

Aug. 2020 to Current

- Analyzed thousands of synaptic structures in hundreds of image stacks from different brain regions in important disease contexts
- Designed and implement data analytics for the first multicolor, 3-D, molecular portraits of neuronal synapses generated using the first-ever method for mapping densely packed molecules in cells, which the Boyden Lab created to physically expand biomolecules apart from each other so that labels can access the inner workings of crowded protein environments

Massachusetts Institute of Technology Littleton Lab

Research Intern

May 2020 to Current

At the cross-section of machine learning and neuroscience, my work at this lab has revolved around two separate projects:

- Building a synapse-analysis pipeline via MATLAB that calculates the probability of synaptic release and automates synaptic ROI detection
- Writing code in conjunction with statistics to model how and when individual synaptic entities fire

Wellesley College Computer Science Department

CS111 Teaching Assistant

Aug. 2020 to Current

I work with the Computer Science department for 10 hours/week with 100 students taking CS111, an introductory CS course taught in Python. I host weekly office hours to address any issues/concerns students may have, and assist CS111 labs (equivalent of precepts/recitations). I represent the student body with feedback on the curriculum at weekly TA and faculty meetings.

Rewriting the Code

Fellow and Peer Mentor

June 2020 to Current

Rewriting the Code is a national organization built on supporting women in engineering and computer science fields. I was accepted into their selective fellowship program in June 2020. I also work as a peer mentor, guiding RTC women entering their first year of college and providing them with support to succeed in technology-based majors.

Massachusetts Institute of Technology Sur Lab

Research Assistant

Dec. 2019 to Current

The focus of this project is to understand the role of the anterior cingulate cortex (ACC) in decision-making. I am contributing to this project by processing and analyzing physiological data from ACC output cells to the visual cortex and superior colliculus. I use MATLAB, Python, Suite2p and ImageJ to extract traces from real experimental data.

Wellesley Wiest Computational Neuroscience Lab

Research Assistant

Sept. 2019 to Jan. 2020

I helped research the effects of scopolamine on event-related potentials. We observed the passive "oddball" paradigm in rats via stimulus specific neural adaptations. I also analyzed the acquired lab data in MATLAB.

Projects

Author of PACISCA (ML Pipeline) Paper

Sept. 2020

Through MIT's Littleton Lab, I was accepted to the IEEE URTC 2020 Conference where my paper was approved for publishing. I am one of three first authors. Our paper, "PACISCA", discusses how we developed a novel pipeline that analyzes synaptic ROIs to map the probability of synaptic transmission at the resolution of individual active zones. The pipeline has four main components: automated synapse annotation/image motion correction (using machine learning), flash identification, fluorescence tracing, and probability mapping. The paper will be published in approximately 2 months.

College Counseling

June 2020 to Current

I mentor high school kids for college admissions by hosting several online seminars. I do this work pro-bono for impoverished students and families through my local non-profit, Science Gurus.

Computer Science Summer Internship Founder

June 2020 to Current

I co-founded a computer science summer program through a local non-profit, Science Gurus. We teach 8th-10th grade students the fundamentals of python and require them to create their own projects (including a research paper). We introduce them to a world of opportunities in nearly every field by coordinating with several guest speakers as well.

Contact

✉ sk1@wellesley.edu

in shreyakochar

Education

Wellesley College

BA Computer Science
GPA: 4.00/4.00

Aug. 2019 to May 2023

Massachusetts Institute of Technology

Cross-registered student
GPA: 5.00/5.00

Dec. 2019 to June 2023

Mission San Jose High School

Unweighted GPA: 3.93
Weighted GPA: 4.35

Aug. 2015 to June 2019

Skills

Python

SQL

Java

C

MATLAB

Assembly Language (x86)

Javascript

HTML

Word

Google Apps

Photoshop

Excel

Activities

Girls Who Code College Loops

Jan. 2020 to Current

• President

I am currently the president of the Girls Who Code chapter at Wellesley College. Currently, I am focusing on building a curriculum to teach Python to girls in neighboring high schools, as well as bringing speakers in the field to talk at the college.

Wellesley News

Opinions Editor

Aug. 2019 to Current

I was an editor for the Wellesley News "Sports and Wellness" section, and now, I write the Op-Eds. I have written approximately 30 articles and help other writers better their pieces.

Courses

- CS 240: Fundamentals of Programming
- CS 230: Data Structures
- CS 111: Computer Programming & Problem Solving
- ECON 101: Principles of Microeconomics
- MATH 205: Multivariable Calculus
- MATH 225: Combinatorics and Graph Theory
- NEUR 100: Introduction to Neuroscience
- PHYS 107: Principles and Applications of Mechanics
- Udacity's Data Structures and Algorithms