Hossam Zaki

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Education

Brown University | Sc.B Computational Biology Candidate| PLME| GPA 3.95/4.0 *Providence, RI, May 2022*

- Relevant Coursework**:** Introduction to Data Structures and Algorithms, Arabic 1 & 2, Experimental VR, Practical System Skills, Computational Molecular Biology, Software Engineering, Computer Vision, Honors Statistics
- Scholarships: Jackie Robinson Foundation Scholar, American Chemical Society Scholar, 2019 Merck ACS Scholar

South Kingstown High School *South Kingstown, RI, June 2018*

- Class of 2018 Valedictorian (5.25 out of 5.33 weighted GPA, 4.0 unweighted)

Skills

Technical: Proficient in Java, Python, Git, HTML, CSS, Flask, and Bash. Currently learning C, SQL, C#, React and JavaScript
Languages: English, Arabic, Spanish

Work Experience

Protein Data Bank of Europe | Software/Biological Intern *Cambridge, UK, Summer 2019*

- Developed a pipeline to superpose protein structures in a UniprotKB Accession, cluster the proteins based on structure similarity, and show them visually on PyMol
- Designed Algorithm using Python and SQL and analyzed data using Hierarchical Clustering.
- Compiled the algorithm on over 47,000 Uniprot Accessions which included over 350,000 PDBe entries
- Co-authored and published a paper to Nucleic Acids Research titled "PDBe: Improved findability of Macromolecular structure data in the PDB"

Brown University Molecular Biology/Wessel Lab | Undergraduate Researcher *Providence, RI 2017 – Present*

- Researched the effect of Sea Star Wasting Disease on the embryonic development of Sea Star and Sea Urchin
- Developed pipeline to search and find new genetic motifs in the RNA of germ-line cells using Python and the Knuth-Morris-Pratt algorithm
- Co-authored an abstract presented in Developmental Biology of the Sea Urchin Conference titled: "Bisphenol A exposure differentially affects echinoderm embryogenesis. Developmental Biology of the Sea Urchin"

Projects

Computational Analysis of Sea Urchin Transcriptome *Wessel Lab, Brown University, 2019 - Present*

- Developed pipeline to search for known genetic motifs in the transcriptome of the Sea Urchin, as well as discovering new motifs
- Implemented Knuth Morris Pratt Algorithm to linear-time pattern recognition as well as a Suffix Trie to search for the longest most common substring
- Currently implementing Local Alignment to search for miRNA binding sites within each transcript

COVID-19 Sequence Analysis *Independent Project, 2020- Present*

- Developed method to compare the sequence of the Novel Coronavirus with other viruses such as SARS, MERS, and HIV
- Implemented Global and Local Alignment to align sequences together and return an alignment score

MentorConnect *Hack@Brown, 2020*

- Built a Web App using Python, HTML/CSS, Flask and MongoDB to connect students with fellow student mentors

Leadership Experience

Warren Alpert Medical School | Volunteer *Providence, RI, Summer 2017 - Present*

- Shadowed doctors in different specialties and would help around different offices at Rhode Island Hospital

LaGuardia Community College | Volunteer *New York City, NY, Fall 2018*

- Presented to students on how to get research opportunities and resume writing

STEM to Help | President and Founder *South Kingstown, RI, Fall 2014 - Spring 2018*

- Developed and created a non-profit organization to inspire high school students to become scientists, and to raise money to help educate children all over the world. Sponsored a school in Senegal through a multitude of fundraisers such as STEM Nights, bazaars, school supplies drive, and yard sales.

Boy Scouts of America | Eagle Scout *South Kingstown, RI, Fall 2012 – Fall 2017*

- Built an outdoor classroom, which is still used today, and renovated a long hallway in my local middle school