GIDEON SHAKED

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EDUCATION

University of Michigan August 2022 - Present

B.S. - Double Major in Computer Science & Molecular and Cellular Biology Ann Arbor, MI

Coursework: Machine Learning, Data Structures & Algorithms, Data Science, Linear Algebra, Discrete Math

Honors Program

RESEARCH EXPERIENCE

University of California, Los Angeles June 2024 - Present

Research Intern - Bruins In Genomics (NSF REU) Los Angeles, CA

Advisor: Dr. Jason Ernst

- Functionally annotated the epigenome of iPS cells by qualitatively characterizing combinatorial and spatial patterns of chromatin marks discovered with ChromHMM
- Awarded the B.I.G. Summer Research Excellence Award

University of Michigan September 2022 - Present

Research Assistant I Ann Arbor, MI

Advisors: Dr. Matthew Patrick and Dr. Lam (Alex) Tsoi

- Created Loopsim, an efficient bioinformatics application that uses a novel algorithm to detect and characterize interactions facilitated by chromatin loops in chromosome conformation capture data
- Worked on a ML model for imputing spatial transcriptomics data using single cell RNA sequencing data, combining the high fidelity of single cell sequencing data with the spatial information of spatial transcriptomics
- Received academic credit in freshman year through competitive admission to undergraduate research opportunity program; employed as funded RA from then on

Tel Aviv University June 2023 - Present

Research Intern Tel Aviv, Israel

Advisors: Dr. Ron Shamir and Dr. Ran Elkon

- Identified causative genes for phenotypic abnormalities by applying active module identification algorithms
- Integrated DOMINO, an active module identification algorithm, with Drugst.One, a biological network enrichment analysis program
- Upgraded DOMINO with refreshed web interface to facilitate better user experience

Young Researchers Program December 2020 - May 2022

Student Researcher Miami, FL

- Developed a statistical analysis pipeline for spectroscopic data collected from shark blood
- Developed a software-controlled robotic positioning system for laser spectroscopy equipment
- Worked on a machine learning algorithm that optimized the placement of the laser spectroscopy emitter
- Mentored other students on the operation and design of the control software and robotic system

PUBLICATIONS

- **Gideon Shaked**, Haihan Zhang, Zhaolin Zhang, Johann E. Gudjonsson, James T. Elder, Matthew T. Patrick, & Lam C. Tsoi. (2024). Loopsim: Enrichment Analysis of Chromosome Conformation Capture with Fast Empirical Distribution Simulation (p. 2024.06.03.595407). bioRxiv. https://doi.org/10.1101/2024.06.03.595407 (under review)
- Andreas Maier, Michael Hartung, [and 37 others, including **Gideon Shaked**]. (2024). Drugst.One — A plug-and-play solution for online systems medicine and network-based drug repurposing. Nucleic Acids Research, gkae388. https://doi.org/10.1093/nar/gkae388

PRESENTATIONS

- **Gideon Shaked**, Jingyuan Fu, & Jason Ernst. (2024, August 16). Identifying Functional Genomic Regions in iPSC Reprogramming with ChromHMM. UCLA B.I.G. Summer Research Symposium, Los Angeles, CA. (poster)
- **Gideon Shaked**. (2023, July). Causative Gene Analysis with Active Module Identification. Tel Aviv University Summer Research Program, Tel Aviv, Israel. (oral presentation)
- **Gideon Shaked**, Matthew Patrick, Haihan Zhang, & Lam Tsoi. (2023, April 19). LoopSim: A Fast Computational Tool for the Simulation and Analysis of Chromatin Loops. Undergraduate Research Opportunity Program Spring Symposium, Ann Arbor, MI. https://doi.org/10.13140/RG.2.2.16364.13444. (poster)
- **Gideon Shaked**, Max Vallone, Robert Dubard, & Claudia Ochatt. (2021, September 26). Precise Acquisition LIBS Movement Software: An Easily Usable Control Software for Robotized Optomechanical Systems. FACSS SciX 2021, Providence, RI. https://doi.org/10.13140/RG.2.2.36324.65926. (poster)
- Max Vallone, **Gideon Shaked**, Francisco Gomez Rivas-Vasquez, Claudia Ochatt, & Robert Dubard. (2021, September 16). FAPS: A Cost-Effective Software-Controlled 5-Axis Positioning System for LIBS. FACSS SciX 2021, Providence, RI. https://doi.org/10.13140/RG.2.2.20139.00803. (poster)

PERSONAL PROJECTS

Nextinspace

- Programmed application that tracks rocket launches and other outer space phenomena in real time
- Attained over 36,000 user downloads as of August 2024
- Designed a user-friendly text interface and a comprehensive API that developers can use to build extensions and plugins

Forum Post Classifier

- Programmed a classifier to label student questions from the Q&A platform Piazza using machine learning techniques and natural language processing

SKILLS AND CERTIFICATIONS

Programming Languages	Python, C++, C, Bash, R, Java
Libraries and Frameworks	Pandas, Numpy, SciPy, Scikit-Learn, Matplotlib, Seaborn, Requests
Tools and Technologies	Linux, Git, Slurm, Univa Grid Engine, AWS, Latex
Certifications	Amazon Web Services Certified Cloud Practitioner

HONORS AND AWARDS

Research Excellence Award (UCLA) National Merit Scholarship Finalist