GIDEON SHAKED

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EDUCATION

University of Michigan August 2025 – Present (expected December 2026)
M.S. in Bioinformatics Ann Arbor, MI

University of Michigan August 2022 – Present (expected April 2026)
B.S. in Computer Science Ann Arbor, MI

- Relevant computer science courses: Foundations of Large Language Models, Introduction to Machine Learning, Data Mining, Practical Data Science, Data Structures & Algorithms, Discrete Math, Linear Algebra
- Relevant biology courses: Introduction to Genetics, Developmental Biology, Organic Chemistry

RESEARCH EXPERIENCE

University of Michigan September 2022 – Present
Research Assistant I Ann Arbor, MI
Advisors: Dr. Alex (Lam) Tsoi and Dr. Matthew Patrick

- Developed Loopsim, a bioinformatics tool with a novel algorithm for detecting and characterizing chromatin loop-driven interactions in Hi-C data, and published a first-author manuscript on this work
- Optimized single-cell RNA sequencing pipelines to handle larger datasets for high-throughput analysis

Broad Institute of MIT and Harvard June 2025 – August 2025
Visiting Researcher Cambridge, MA
Advisors: Dr. Evan Macosko and Dr. Abdelrahman Mahmoud

- Developed models to predict transcriptional effects of genetic perturbations using single-cell RNA-seq data, gene regulatory networks, AlphaMissense pathogenicity scores, and AlphaGenome variant effect predictions
- Created perturbation propagation algorithms to model how mutations cascade through regulatory networks, and evaluated performance on hematopoietic stem cell datasets
- Awarded Nucleate DojoHouse fellowship for housing, funded by Emergent Ventures, 1517 Fund, and Amaranth

University of California, Los Angeles June 2024 – July 2024
Research Intern — Bruins In Genomics (NSF REU) Los Angeles, CA
Advisor: Dr. Jason Ernst

- Functionally annotated induced pluripotent stem cell epigenomes using ChromHMM to analyze ATAC-seq data, employing Hidden Markov Models to identify regulatory regions during cellular reprogramming
- Won the B.I.G. Summer Research Excellence Award for outstanding research in functional genomics

Tel Aviv University June 2023 – July 2023
Research Intern Tel Aviv, Israel
Advisors: Dr. Ron Shamir and Dr. Ran Elkon

- Applied computational algorithms to identify disease-associated gene subnetworks, and integrated new gene/protein network analysis tools into an existing drug discovery platform to map therapeutic targets
- Overhauled legacy Expander genomics software through ground-up reconstruction featuring web-based interface, new analysis methods, and additional algorithmic options

Young Researchers Program December 2020 – May 2022

Student Researcher Miami, FL

- Built robotic arm for laser spectroscope with machine learning optimization for data quality
- Developed a statistical analysis pipeline for processing spectroscopic data from shark blood
- Trained students on system operation to enable student-led follow-up studies

PUBLICATIONS

- **Gideon Shaked**, Haihan Zhang, Zhaolin Zhang, Jiayu Zhou, Johann E. Gudjonsson, James T. Elder, Matthew T. Patrick, & Lam C. Tsoi. (2025). Loopsim: enrichment analysis of chromosome conformation capture with fast empirical distribution simulation. NAR Genomics and Bioinformatics, lqaf098. https://doi.org/10.1093/nargab/lqaf098
- 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**, Xin Luo, Albon Wu, & Alexander Dziedzic. (2024, December). Retraining IgFold to Predict Interactions Between Antibodies and Antigens. Foundations of Large Language Models Poster Session. (poster)
- **Gideon Shaked**, Jingyuan Fu, & Jason Ernst. (2024, August 16). Identifying Functional Genomic Regions in iPSC Reprogramming with ChromHMM. UCLA B.I.G. Summer 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)

SKILLS AND CERTIFICATIONS

Programming Languages	Python, R, C++, C, Bash, Java
Libraries	PyTorch, Scikit-Learn, Spark, Scanpy, Seurat, Matplotlib, Seaborn, Plotly,
Tools and Technologies	Slurm, Univa Grid Engine, Snakemake, GCP, AWS, Linux, Git
Certifications	Amazon Web Services Certified Cloud Practitioner

PERSONAL PROJECTS

Nextinspace | Press (Web Article)

- Developed a real-time tracking application for rocket launches and space events with CLI and developer API
- Surpassed 48,000 downloads as of September 2025, demonstrating widespread adoption and interest

HONORS AND AWARDS

Research Excellence Award (UCLA) Honors Program Student (UMich) DojoHouse Fellowship (Nucleate)