Aatmik **Mallya**

Computer Science & Mathematics · AI Research · Computational Biology Research

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Education

Yale University
August 2023 - Present

Ph.D. Computational Biology & Bioinformatics — *New Haven, CT*

Gruber Science Fellow: "The Gruber Science Fellowship is awarded to the most highly ranked applicants to Yale PhD programs in the life sciences, cosmology, and astrophysics. This Fellowship is the most prestigious award offered by Yale's Graduate School of Arts and Sciences to incoming science students in recognition of their outstanding accomplishments and exceptional promise".†

Arizona State University
August 2019 - May 2023

B.S. Mathematics and Computer Science | GPA: 3.99 — *Tempe, AZ*

Computer Science: Foundations of Machine Learning, Data Structures & Algorithms, Software Eng., Operating Systems, Object-oriented Programing
Math: Probability, Applied Statistics, Linear Algebra, Advanced Calculus, Differential Equations, Stochastic Processes, Computational Statistics
Biology: Translational Bioinformatics, Algorithms in Computational Biology, Computational Molecular Biology, General Biology I & II, General Chemistry I, Genetics (MITx)†, General Biochemistry (MITx)†, Molecular Biology (MITx)†

Experience

ASU Biodesign Institute – Petr Šulc's Lab†
August 2022 – May 2023

Undergraduate Researcher — *Tempe, AZ*

- Developed deep learning algorithms for peptide & RNA aptamer design to improve cancer diagnostics, in collaboration with Caris Life Sciences
- Utilized trained models to classify and generate novel binders with diagnostic and therapeutic applications
- Built off experimentally verified work in the lab that confirmed the model's efficacy in predicting binding affinity to thrombin

Yale University – Gerstein Lab†
June – August 2022

Undergraduate Researcher — *Tempe, AZ*

- Developed machine learning models to expand eQTL catalogs, which examine the effect of genetic variants on gene expression levels
- Created a Nextflow pipeline leveraging chromatin signals, single cell data, and sequence data to generate training sets
- Generalized eQTL patterns across human tissues in order to expand existing eQTL catalogs into new tissues

Arrakis Therapeutics
January – June 2022

Computational Biology Co-op (Full time) — *Boston, MA*

- Implemented deep learning models and a data mining process to facilitate drug development targeting RNA splicing
- Established a pipeline to quantify RNA splicing using RNA-Seq data and improved the interpretability of models that predict splicing
- Utilized methods to interpret deep learning models for identification of sequence motifs that contribute to RNA splicing

ASU Biodesign Institute – Petr Šulc's Lab†
February 2020 – January 2022

Undergraduate Researcher — *Tempe, AZ*

- Developed software for simulating, designing, and visualizing DNA nanostructures; applications in drug delivery, diagnostics, and nanophotonics
- Designed and implemented nanobase.org, the first public database for DNA/RNA nanostructure designs; currently contains 60+ structures
- Co-authored 3 journal papers to Nucleic Acids Research & Nature Protocols and 2 conference posters on oxview.org, oxdna.org, & nanobase.org

Walmart Inc. – Sam's Club
June – August 2021

Machine Learning Engineer Intern — *Bentonville, AR (Remote)*

- Independently developed machine learning regression algorithms to optimize supply chain operations at distribution facilities
- Successfully deployed models to 16 distribution centers to reduce out-of-stock time of non-perishable items by 8% on average
- Conducted exploratory data analysis, feature engineering, deployment, and continuous testing of regression algorithms using AWS

Undergraduate Teaching Assistant
August – December 2020

Intro to Programming Languages – CSE 240 — *Tempe, AZ*

- Held office hours, hosted review presentations, and provided assistance on assignments & projects throughout the semester
- Taught lectures on programming paradigms, including imperative, object-oriented, functional, and declarative languages (C, C++, Scheme, Prolog)

Mathnasium
June – October 2018

Instructor — *Gilbert, AZ*

- Tutored students on mathematical concepts from basic arithmetic through calculus and provide assistance on math assignments
- Assisted with curriculum design for students (elementary through high school) to facilitate success in understanding mathematical concepts

Publications

Joakim Bohlin, Michael Matthies, Erik Poppleton, Jonah Procyk, **Aatmik Mallya**, Hao Yan, Petr Šulc. *Design and simulation of DNA, RNA and hybrid protein–nucleic acid nanostructures with oxView.* Nat Protoc 17, 1762–1788, 6 June 2022. https://doi.org/10.1038/s41596-022-00688-5

Erik Poppleton, **Aatmik Mallya**, Swarup Dey, Joel Joseph, Petr Šulc. *Nanobase.org: a repository for DNA and RNA nanostructures.* Nucleic Acids Research, Volume 50, Issue D1, 7 January 2022, Pages D246–D252, https://doi.org/10.1093/nar/gkab1000

Erik Poppleton, Roger Romero, **Aatmik Mallya**, Lorenzo Rovigatti, Petr Šulc. *OxDNA.org: a public webserver for coarse-grained simulations of DNA and RNA nanostructures*. Nucleic Acids Research, Volume 49, Issue W1, 2 July 2021, Pages W491–W498, https://doi.org/10.1093/nar/gkab324

Conferences

Beatrice Borsari, Yuhang Chen, **Aatmik Mallya**, Lucy Sun, The ENCODE EN-TEx Working Group, Roderic Guigó, Mark B Gerstein. *transferQTL: expanding existing expression-QTL catalogs across human tissues by leveraging chromatin data.* Biological Data Science, 2022.

Erik Poppleton, **Aatmik Mallya**, Swarup Dey, Joel Joseph, Petr Šulc. *Nanobase.org: a repository for DNA and RNA nanostructures.* DNA27 Conference, 18 September 2021.

Joakim Bohlin, Erik Poppleton, Michael Matthies, **Aatmik Mallya**, Petr Šulc. (2021). *How to Design Free-form DNA Nanostructures Online.* FNANO 2021.

Projects

Honors Thesis
August 2022 - May 2023

Comparison of Machine Learning Algorithms for Breast Cancer Classification

Applied machine learning to breast cancer diagnostic datasets to classify tumors based on physical characteristics of cell nuclei from medical imaging.

ProChange Behavior Solutions
August 2022 - January 2023

Capstone Project II

Employed sentiment analysis and data mining to create a social media listening tool that captures and analyzes sentiments towards climate change.

AlgoFace Inc.
August - December 2021

Capstone Project I

Developed a real time facial tracking & animation tool using an optimization process that fits a 3D model to an arbitrary 2D image of a face.

Twitter Bot†
October 2020

Hackathon Project

Utilized Natural Language Processing and the Twitter API to create a twitter bot which generates humourous mad-lib translations (@strawmantest); hosted bot on a Google Cloud Compute instance that listens 24/7 for tweets from news outlets and mentions.

Linked List Visualization
May 2020

Honors Project

Independently created a visualization tool for linked list algorithms to provide as learning material for other students; involved creating a web application and developing animations for each algorithm. Used in CSE 240 - Introduction to Programming Languages.

Honors & Awards

New American University Scholar Full tuition scholarship to ASU based on academic merit — *2019 - 2022*

National Merit Scholar Finalist Awarded by National Merit Scholarship Corporation — *2019*

Gruber Science Fellowship Awarded by Yale University — *2019*

Top 16 in International Public Policy Forum Engaged in written debates with 200+ international teams — *2019*

Organizations

Barrett, The Honors College Involves taking honors classes & projects and defending a thesis — *2019 - 2023*

AI Club Learned about artifical intelligence through guest speakers, projects, and workshops — *2020 - 2023*

Software Developer's Association Participated in workshops & challenges and attended weekly meetings — *2019 - 2021*

Fencing Club at Arizona State University — *2019 - 2020*

Skills

Programming Languages Python, C++, Shell, Nextflow, SQL, Java, MATLAB, R, JavaScript

Libraries Numpy, Pandas, Scikit-learn, PyTorch, Tensorflow, Keras, SciPy, Matplotlib, Seaborn

Technologies Cloud computing (Azure, AWS, Google Cloud), Linux (Ubuntu), Git, Jupyter, LaTeX

Practices Bioinformatics, Machine Learning, Computer Vision, Database Management, Unit Testing

Interests Chess, Racquetball, Rubik's Cubes, Hiking, Meditation, Video games