Tamjeed Azad

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Education

- **Princeton University, Ph.D. (Anticipated)** — Princeton, NJ
  Computer Science. *August 2022 - Present*
  - Advised by Prof. Yuri Pritykin; working on projects focusing on single-cell genomics, spatial transcriptomics, and cell communication.
  - Cumulative GPA: 4.00.
- **Columbia University, B.S.** — New York, NY
  Major: Computer Science, Minor: Economics. *August 2018 - May 2022*
  - Cumulative GPA: 3.99. Grade: Magna Cum Laude.
  - Selected Coursework: ML for Functional Genomics, Neural Nets & Deep Learning, Computer Vision I/II, Biostats for Engineers, Machine Learning, Artificial Intelligence, Computational Aspects of Robotics, Natural Language Processing, Intro to Networks and Crowds, Analysis of Algorithms I, Programming Languages & Translators

Honors

- Cummins Merit Fellowship Recipient, Princeton University, 2022-2023.
  Allen School CSE PhD Research Fellowship, University of Washington, 2022-2023 (declined).
  Tau Beta Pi Honor Society Member since November 2020.
  NSF REU Participant, University of Tennessee at Chattanooga, iCompBio 2020.
  Columbia Summer Undergraduate Research Fellowship (SURF) 2019.
  CP Davis Scholar, Columbia University Scholars Program (CUSP), 2018-2022.
  Columbia University Dean's List all eligible semesters, 2018-2022.
  National Merit Scholar (Tennessee), 2018.

Work Experience

- **Software Development Engineer Intern** — Amazon
  Return summer intern in Amazon Selection and Catalog Systems. *June 2022 - August 2022*
  - Worked on the Items and Offers Platform team; project focused on adding internal authentication and user awareness functionality to the Offer Service Buyability Analyzer Tool.
- **Research Assistant, Azizi Lab** — Columbia University
  Developing and applying machine learning methods for single-cell genomics. *February 2020 - May 2022*
  - Worked on developing a method using variational autoencoders and ensembling techniques to construct generative models for scRNA-seq data.
  - Also worked on a project analyzing immune cell dynamics in acute lymphoblastic leukemias; applied single-cell Variational Inference (scVI) to explore heterogeneity of cells in disease context.
  - Also worked on a project analyzing immune cell lineage vs differential gene expression in Growth v Host Disorder patients' tissues. Created data processing pipelines and applied clustering algorithms to explore single-cell datasets.
- **Teaching Assistant** — Columbia University
  TA in the CS and EE departments of Columbia. *September 2020 - May 2022*

- (*Spring 2022, Fall 2021, Spring 2021*) Course Assistant for CSEE 3827: Fundamentals of Computer Systems. Responsibilities include guiding students through course concepts & assignments in office hours and course forums (EdStem, Piazza), and assignment grading & proctoring.
- (*Spring 2021, Fall 2020*) Lab Assistant for ELEN 1201: Intro to Electrical Engineering. Working with a team of undergraduate lab assistants, graded lab reports and held virtual lab office hours each week to guide students through lab assignments.

- **Software Development Engineer Intern** Amazon
  Summer intern in Amazon Selection and Catalog Systems. *June 2021 - August 2021*
  - Worked on the Items and Offers Platform team; used the AWS CDK to create an end to end prototype log monitoring application, and a framework for extending prototype to production log data. Primarily used Python and TypeScript to code the application.

- **Summer Research Intern, Qin Lab** University of Tennessee at Chattanooga
  Paid summer intern through iCompBio REU 2020. *May 2020 - July 2020*
  - Created several recurrent neural networks using TensorFlow for predicting weekly new COVID-19 positive cases in New York, Texas, California, and Florida. Source code on personal GitHub profile.
  - Analyzed effectiveness of using historical flu data and temperature data for prediction.
  - Presented work at 12th Annual NIMBioS Undergraduate Research Conference in Fall 2020.

- **Research Assistant, Synthetic Biological Systems Lab** Columbia University
  Assistant in research on engineering bacterial biosensors. *October 2018 - August 2019*
  - Engineered bacteria that selectively grew and fluoresced in a low pH environment. Developed synthetic bio wet lab skills such as PCR, gel electrophoresis, and cell culturing.
  - Completed paid summer internship in the lab through Columbia SURF 2019. Also received 2019 CUSP Summer Enhancement Fellowship for financial support.
  - Presented summer work as a poster at the 2020 Columbia SURF Symposium. Work incorporated into coauthored paper in *Nature Biomedical Engineering*.

- **Research Assistant, Klug Lab** University of Tennessee at Chattanooga
  Computational research in evolutionary ecology. *November 2016 - August 2018*
  - Computationally analyzed and helped develop mathematical models that model the evolution of parental care in nature. Specific project focused on the link between life history traits, mating dynamics, and care's evolution.
  - Work incorporated into first-authored publication in the *Journal of Evolutionary Biology*.

Publications

- Camara, A., Taneja, N., **Azad, T.**, Allaway, E., & Zemel, R. (2022). Mapping the Multilingual Margins: Intersectional Biases of Sentiment Analysis Systems in English, Spanish, and Arabic. *Proceedings of the Second Workshop on Language Technology for Equality, Diversity and Inclusion*, 90–106, Association for Computational Linguistics. Oral Presentation. http://dx.doi.org/10.18653/v1/2022.ltedi-1.11

- **Azad, T.**, Alonzo, S. H., Bonsall, M. B., & Klug, H. (2021). Life history, mating dynamics and the origin of parental care. *Journal of Evolutionary Biology*, 35, 379–390. https://doi.org/10.1111/jeb.13959

- Chien, T., Harimoto, T., Kepecs, B., Gray, K., Coker, C., Hou, N., Pu, K., **Azad, T.**, Nolasco, A., Pavlicova, M., & Danino, T. (2021). Enhancing the tropism of bacteria via genetically programmed biosensors. *Nature Biomedical Engineering*. 6, 94–104. https://doi.org/10.1038/s41551-021-00772-3

Projects

- **PolyWiz** (*2021 Spring*) Programming language designed for a 5-person team project as a core component of Programming Languages and Translators class. Language uses C-like syntax and has extensive native support for polynomial computing and plotting. Translator architecture written using OCaml and C. Source code and project report accessible on GitHub profile.

Technical Skills

- **Languages:** Python, R, Java, MATLAB, C/C++, OCaml, TypeScript, JavaScript
  Frameworks: PyTorch, TensorFlow | **Tools:** AWS, GCP, Bash, Git.

Extracurricular Activities

- **Writer, Princeton Insights** Princeton University
  Group highlighting Princeton research in published, accessible, and short reviews. *Since Spring 2023*
- **Senior Advisor, Club Zamana** Columbia University
  Umbrella organization for Columbia's South Asian community. *2021-2022* School Year
  - Media Chair, 2019-2020 School Year; Organizational Committee Member, 2018-2019 School Year.
- **E-Board Member, Columbia Science Review** Columbia University
  Club that hosts science-focused events and publishes a science-focused magazine. *2019* Spring Semester

Community Service

- Erlanger Health System Summer VolunTEEN 2017, Signal Mtn. Library Volunteer (2016-2017), Signal Mtn. Middle School MATHCOUNTS Team Founder & Coach (2017-2018).