Adiba Ejaz

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EDUCATION

Columbia University, New York, NY May 2023

B.A. in Computer Science and Mathematics (GPA: 4.0. Dean's List. Concentration: Philosophy)

Relevant coursework: Advanced Programming (*Unix, C).* Analysis of Algorithms. Fundamentals of Computer Systems. Data Structures (*Java*). Abstract Algebra I. Real Analysis I. Discrete Mathematics. Honors Mathematics A and B.

SKILLS

- **Programming languages:** Java (proficient), Python (proficient), C (proficient), JavaScript, HTML, CSS.
- **Technologies & frameworks:** Git, Unix, LaTeX. Experience with MongoDB, Express.js, React.js, Node.js.

PROFESSIONAL EXPERIENCE

Software Engineer Intern, ServiceNow. Santa Clara, CA May 2021 – Present

With the cloud infrastructure team under the Software within Systems division.

Research Assistant, Columbia University. New York, NY May 2020 – Present

Software development for the Department of Applied Physics and Applied Mathematics.

- In team of 3, developed full-stack (MERN) web application for research group database management
- Authored and maintained multiple *Python* scripts using test-driven development for database querying in Regolith
- Researched and introduced new unit testing mechanism for invalid database entry responses using *pytest*
- Built *matplotlib* tool to analyze, correct, and project grant expenditure, accelerating component functions by over 40%

Honors Mathematics Teaching Assistant, Columbia University. New York, NY. January – May 2021

Honors Mathematics B is a rigorous, proof-based course in linear algebra and multivariable calculus.

- Conducting weekly office hours to systematically review, discuss, and reinforce lecture material
- Grading problem sets with comprehensive feedback for ~45 undergraduates

LEADERSHIP AND ACTIVITIES

Technology Director, *Columbia Superposition*
Conducting technical workshops with national non-profit developing CS pedagogy for women in computer science.

Team Liaison, *Columbia Debate Society.*
Cornell finalist. Top 5 individually at CUNY and American University. World Schools UAE National Team.

Back-End Developer, *Columbia Data Product Initiative*
Building and maintaining backend services for machine learning based music transcription application.

Directed reading program, *Association for Women in Math.*
Dr. Xuan Wu, University of Chicago. Gave talks on simple random walks. Built Python Gambler's ruin simulation.

PROJECTS & RESEARCH

Spectral graph theory applied to topological data analysis. *Columbia University.*
Research under Professor Simon Billinge and Adjunct Scientist Michael Waddell in the Applied Physics and Mathematics department on developing an algorithm to extract homologies and filter noise of high-dimensional datasets using the Laplacian matrices of their persistence graphs.

Mutually avoiding paths problem. Professor Christos Papadimitriou's *Algorithms* course. *Columbia University.*
Designed and implemented a polynomial-time approximation algorithm using randomization for the NP-complete problem of finding k vertex disjoint paths between k source-sink pairs in a graph. 98% effective against adversarial inputs for $k = 10$.