# Adiba Ejaz

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## EDUCATION

**Columbia University**, New York, NY                                                                                                  May 2023
*B.A. in Computer Science and Mathematics* (GPA: 3.926. Dean's List.)
<u>CS coursework:</u> Advanced Programming* (*Unix, C*). Fundamentals of Computer Systems*. Data Structures (*Java*)
<u>Math coursework</u> Modern Algebra I*. Discrete Math*. Honors Math A and B (multivariable calculus & linear algebra).

**GEMS Modern Academy**, Dubai, UAE                                                                                                  May 2019
IBDP (GPA: 45/45, SAT 1570 800 Math 770 Verbal, 800 Math II). *Valedictorian. KS Varkey Scholarship.*

\* this semester

## SKILLS

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

## PROFESSIONAL EXPERIENCE

**Undergraduate 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%

**Software Engineer Intern, Skye.** New York, NY                                                                      October 2020-Present
- Applying Spotify ANNOY nearest neighbor search algorithm to develop professional coach matching engine
- Implementing back-end infrastructure and external API integration for full-stack web application

**Technical Intern, Dubai Future Accelerators.** Dubai, UAE                                                                March 2018
- Researched applications of start-up PowerIn.Space's energy transfer technology in delivery drones and defibrillators
- Comparatively evaluated performance of start-up STAQU's machine-learning algorithm for speaker recognition.

## LEADERSHIP AND ACTIVITIES

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

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

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

**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.

## RESEARCH

**Spectral graph theory applied to topological data analysis.** *Columbia University.*                          May 2020-Present
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.

**On the partitioning of n-spheres**. *International Baccalaureate.*                                                          May 2018-19
Computational geometry paper arriving at a result enumerating the optimal partitioning of *n*-dimensional spheres by hyperplanes. Grade A (awarded to top ~10% of candidates).