

Adiba Ejaz

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RESEARCH INTERESTS	Computational semantics, computation and philosophy of mind, causality, computational complexity, automated theorem proving
EDUCATION	Columbia University , New York, NY May 2023 <i>Bachelor of Arts</i> in Computer Science – Mathematics. Concentration in Philosophy. <ul style="list-style-type: none">• Dean’s list for all applicable semesters• GPA 4.06, major GPA 4.02
RESEARCH EXPERIENCE	Department of Computer Science, Columbia University. Fall 2022 <i>Generalisation of triangle-counting using matrix multiplication to k-node subgraphs.</i> For Professor Josh Alman’s graduate research seminar COMS 6998: Fine-grained complexity. Department of Computer Science, Columbia University. Fall ’21 - Spring ’22 <i>A biologically plausible parser for natural language syntax in the brain extended to center-embedded sentences and constituency trees.</i> Collaborators: Professor Christos Papadimitriou (supervisor), Mirah Shi Department of Philosophy, Columbia University. Spring 2022 <i>An account of the falsehood and felicity of the Morgenbesser counterfactual: non-deterministic outcomes against the causal independence principle.</i> For Professor Jessica Collins’s graduate research seminar PHIL 9485: Conditionals. Department of Philosophy, Columbia University. Spring 2022 <i>How should we prove theorems? Reviving Hilbert’s thesis with interactive proof verification.</i> For Professor Justin Clarke-Doane’s graduate research seminar PHIL 9941: Metalogic. The Billinge Group, Columbia University. Summer 2020, 2021 <i>Spectral graph theory applied to topological data analysis: using distance matrices to derive higher dimensional simplices, holes, and their persistence.</i> Collaborators: Professor Simon Billinge (supervisor), Michael Waddell, John Willey
CONFERENCE PROCEEDINGS	Papers <i>Center-Embedding and Constituency in the Brain and a New Characterization of Context-Free Languages.</i> Daniel Mitropolsky, Adiba Ejaz, Mirah Shi, Christos Papadimitriou, and Mihalis Yannakakis. <i>arXiv</i> <i>In Proceedings of the 3rd Natural Logic Meets Machine Learning Workshop (NALOMA III).</i> Association for Computational Linguistics.

SEMINARS	Columbia Undergraduate Seminar in Number Theory and Diophantine Equations	
	Columbia Undergraduate Seminar in Theoretical Computer Science	
	• Organiser, <i>Formal semantics of programming languages</i>	Fall 2022
	• Speaker, <i>Philosophy of computation</i>	Spring 2022
	• Organiser, <i>Algorithmic game theory</i>	Summer 2021
	Directed reading, <i>Markov Chains</i> . Columbia Undergraduate Math Society	Fall 2020
	Speaker, <i>Simple random walks</i> . Association for Women in Math	Summer 2020
TALKS	<i>An analytic construction of the p-adic numbers</i> . CU Math.	Fall 2022
	<i>An algebraic construction of the p-adic numbers</i> . CU Math.	Fall 2022
	<i>Why formally prove the correctness of programs?</i> CU TCS.	Fall 2022
	<i>The Turing test as interactive, probabilistic proof</i> . CU TCS	Spring 2022
	<i>Computability of pure Nash equilibria</i> . CU TCS	Summer 2021
	<i>Randomised cover time of a complete graph</i> . CU UMS	Fall 2020
	<i>Why the house always wins: the gambler's ruin problem</i> . CU AWM	Summer 2020
	<i>Some discrete probability distributions</i> . CU AWM	Summer 2020
INDUSTRY EXPERIENCE	Software Engineer Intern , Stripe. New York, NY.	Summer 2022
	Built profiler for analysing latency of Golang services. Design buffered channels between parallel threads using queueing theory to ensure invariant profiling rate. Fudged start time for pod spin-up using randomisation to reduce server load.	
	Software Engineer Intern , ServiceNow. Kirkland, WA.	Summer 2021
	Wrote server-side class for analysing runtimes of hardware automations.	
TEACHING	At Columbia, I have worked as an undergraduate teaching assistant for the following courses, grading problem sets and holding weekly office hours and review sessions.	
	• COMS W 4236 Computational Complexity, Professor Xi Chen	Fall 2022
	• MATH GU 4041 Modern Algebra I, Professor Jorge Pineiro	Spring 2022
	• MATH GU 4041 Modern Algebra I, Professor Robert Friedman	Fall 2021
	• MATH UN 1208 Honors Math B, Professor Evan Warner	Spring 2021
	My teaching evaluations are available upon request.	
	I also volunteer for Corrupt the Youth, teaching introductory philosophy at systemically disadvantaged high-schools in New York.	
SKILLS	Programming Languages: Go, Python, C, Java, JavaScript, Bash, Assembly, \LaTeX .	
	Natural languages: English (fluent), French (intermediate), Hindi (native), Urdu (native), Arabic (elementary)	
INTERESTS	I love to listen to punk music, write satire, and bike; sometimes all at once.	