Ahaan Mehta

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EDUCATION

Brown University, *B.Sc Applied Mathematics & Computer Science*, 4.00/4.00 GPA Providence, RI | **May 2029**
Relevant Courses**:** CSCI 0200 (Program Design with Data Structures and Algorithms), CSCI 0150 (Introduction to OOP in Java), MATH 0520 (Linear Algebra) MATH 0180 (Multivariable Calculus), APMA 0200 (Introduction to Modelling)

EXPERIENCE

T-REX (Brown Space Engineering), *Software & Systems Researcher* Providence, RI | September, 2025– Present

- Designed and implemented Python simulation pipelines to model high-frequency (86 GHz) VLBI baselines and evaluate mission performance for Sgr A* and M87*.
- Contributed to requirements engineering by co-building the Science Traceability Matrix, mapping high-level NASA science goals to software/system requirements.
- Co-authored sections of grant proposals like the NASA NIAC proposal, supporting analysis, modeling, and mission concept validation.

Cambridge Centre of International Research, *Quantum Information Intern* Cambridge, UK | March 2024 – October 2024

- Implemented Python-based numerical simulations (NumPy, QuTiP) to compute CHSH inequality violations and optimize quantum measurement settings.
- Designed modular code for computing correlation matrices, constructing qubit states, and running sweep-based optimization for Bell-test scenarios.
- Worked with Dr. Strelchuk on theoretical analysis and debugging computational models of multipartite entanglement and nonlocality.

PROJECTS

AI Othello - Java (Minimax, OOP)

- Implemented a Minimax-based AI agent with recursive game-tree search and heuristic evaluation.
- Designed a modular OOP architecture for move generation, board logic, and game state transitions.
- Built a playable CLI game demonstrating algorithmic reasoning and clean software design..

Text Summarization using BART Transformer

- Implemented and fine-tuned the BART transformer for abstractive NLU summarization tasks.
- Developed preprocessing pipelines and evaluated with ROUGE metrics vs. CNN/BERT baselines.
- Extended prior research internship by building a more accurate transformer-based model.

Data Compression Analysis for VLBI Satellite Mission,

- Analyzed compression requirements for radio interferometry satellite generating 64 Gb/s data streams, mapping orbital constraints (ground coverage, downlink windows) to storage/throughput specifications.
- Evaluated 5 compression algorithms on synthetic and real Event Horizon Telescope data.

Exploratory Data Analysis & Machine Learning (Uber Global Hackathon 2023)

- Cleaned and engineered features across 10+ datasets using Python (pandas, numpy).
- Trained and tuned ML models (Random Forest, Logistic Regression) for demand prediction.
- Built visualizations (matplotlib, seaborn, folium) and Tableau dashboards; delivered business insights to judges.

LEADERSHIP & INVOLVEMENT

Undergraduate Council of Students at Brown University, *Council Member*

- Lead the International Student Committee within Brown's Undergraduate Council of Students, representing the concerns and interests of the international student body.
- Organize programming, outreach, and dialogue initiatives to improve international students' campus experience..

TISB Hacks, *Chief Organizer*

- Directed and managed India's largest student-run high school hackathon, overseeing strategy, operations, and execution across 230+ participants from 8 countries and securing ₹250,000+ in sponsorship.
- Built cross-functional teams to handle logistics, marketing, sponsor outreach, technical problem-setting, and participant engagement, ensuring a smooth event flow and high-quality experience.

SKILLS & INTERESTS

Technical Skills: Python (NumPy, pandas, matplotlib), Java (OOP), Git/GitHub, Data Structures & Algorithms, Machine Learning.
Awards: Uber Global Hackathon Finalist (Top 6 APAC), Beaver Computing Challenge Distinction (Rank #1 School, #2 India)
Language: Multilingual proficiency in English, Hindi and Punjabi.
Interests: Soccer, Golf, Poker, Card Magic, Film, Adventure Sports.