

# Anubha Mahajan

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## EDUCATION

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### Georgia Institute of Technology

Atlanta, GA

*Bachelor of Science in Computer Science; GPA: 3.94*

*Aug. 2021 – Expected May 2025*

*Concentrations: Intelligence (AI) and Theory*

*Relevant Courses: Machine Learning, Second Course Linear Algebra, Automata & Complexity, Graph Theory, Robotics & Perception, Systems & Networks*

### Technische Universität

Berlin, Germany

*Study Abroad*

*May 2022 – Aug. 2022*

## PAPERS

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### Comparative Analysis of Multi-Agent Reinforcement Learning Policies for Crop Planning Decision Support

Mahajan, A., Hegde, S., Shay, E., Wu, D., Prins, A.

AAAI-25 Cooperative Multi-Agent Systems Decision-Making and Learning Workshop. *In Submission*

## RESEARCH EXPERIENCE

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### Undergraduate Research Assistant — Pathology Dynamics

Georgia Tech

*Supervisor: Dr. Cassie Mitchell*

*Aug. 2024 – Present*

- Developed a CNN-based segmentation model to measure vertebral motion for assessing fusion status in ACDF surgery using labeled cervical radiographs.
- Achieved 99.2% accuracy in spinous process detection by utilizing data augmentation techniques including noise stimulation, blurring, cropping, and rotating.
- Calculated ISPM by converting segmented radiographs into BLOB images, extracting rightmost spinous process coordinates, and measuring pixel distance between them.

### NSF Fellow — Research Experience for Undergraduates (REU)

University of Maryland

*Supervisor: Dr. David Mount*

*Jun. 2024 – Aug. 2024*

- Collaborated with Kheyti, a nonprofit in India, to develop a crop planning decision support tool for small farmers using Multi-Agent Reinforcement Learning.
- Implemented the Multi-Agent Rollout policy that simplifies the global optimization problem into sequential local decisions, leading to increased fairness and overall outcomes for farmers.
- Designed a MySQL database schema to manage simulation data and used Matplotlib and Seaborn to visualize the effectiveness of policies in real-world agricultural settings.

### Undergraduate Research Assistant — Sustainable Urban Systems Lab

Georgia Tech

*Supervisor: Dr. Patrick Kastner*

*Jan. 2024 – Present*

- Developed surrogate models for energy-efficient building design, providing urban planners with real-time decision-making tools to support sustainable city planning in Atlanta.
- Led an interdisciplinary subteam to design a multivariate regression model that reduced simulation times from hours to seconds, utilizing Gradient Boost and Bayesian Optimization.
- Created a game-based tool designed to teach surrogate modeling, allowing architects to optimize building design parameters through interactive challenges aimed at minimizing energy consumption.

### Undergraduate Research Assistant — Pathology Dynamics

Georgia Tech

*Supervisor: Dr. Cassie Mitchell*

*Aug. 2023 – May 2024*

- Collaborated with Emory's Morningside Center to develop an intuitive clinician interface that accelerates quantitative meta-analyses for clinical trial literature review, focused on drug repurposing.
- Proposed and implemented a full-stack web application with Next.js, incorporating interactive Plotly visualizations and user-access management through AWS sign-in authentication.
- Utilized Lambda Functions and OpenAI Gateway to develop advanced filtering capabilities, including a PubMed Query Generator and customizable results table, processing over 1,000 studies in under a minute.

## TEACHING EXPERIENCE

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### Undergraduate Teaching Assistant

Georgia Tech

*CS3510: Design & Analysis of Algorithms*

*Aug. 2023 – Present*

- Developed, administered, and graded exams and weekly homework assignments and held 2+ weekly office hours.
- Led review sessions for a class size of 300+ students and created instructional problem-solving videos.

### Undergraduate Teaching Assistant

Georgia Tech

*CS1331: Intro to Object-Oriented Programming (OOP)*

*Jan. 2023 – May 2023*

- Developed study guides, review sessions, and practice exams for a class size of 1000+ students.
- Led weekly recitations for 30+ students and held 3+ weekly hybrid office hours.

### Peer-Led Undergraduate Study (PLUS) Leader

Georgia Tech

*Math 1554: Intro to Linear Algebra*

*Aug. 2022 – Dec. 2022*

- Facilitated bi-weekly sessions with 20+ students to review key course concepts and develop study strategies.
- Led exam review sessions with 300+ students.

## WORK EXPERIENCE

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### Fractal Analytics

New York, NY

*Data Science Intern*

*May 2023 – Aug. 2023*

- Collaborated with Merck's R&D department to fine-tune a LLM for automating marketing content audits, ensuring the model accurately flagged content violating nuanced regulatory guidelines.
- Employed prompt engineering and developed a curated dataset of industry-specific compliance use cases, resulting in a 20% improvement in model accuracy.
- Built an AI chatbot using Langchain, ChatGPT API, and Hugging Face, streamlining compliance workflows and enabling peer collaboration on prompt engineering and use-case curation.

## TALKS

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### Emory University, Georgia Undergraduate Research Conference (GURC)

Oxford College, GA

*Oral Presentation: Optimizing Building Energy, Game-Based Approach to Surrogate Modeling*

*Nov. 2024*

### MIT Undergraduate Research Technology Conference (URTC)

Cambridge, MA

*Lightning Talk: What should we grow today to make money tomorrow?*

*Oct. 2024*

### Georgia Tech Sustainability Symposium

Atlanta, GA

*Lightning Talk: Surrogate Models for Urban Regeneration*

*Mar. 2024*

### University of North Georgia, Georgia Collegiate Honors Conference (GCHC)

Dahlonega, GA

*Oral Presentation: JAMIA ChatGPT Meta-Analysis Interface*

*Feb. 2024*

## AWARDS

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**Faculty Honors, Georgia Tech:** Maintained a perfect 4.0 GPA across Fall 2021, Spring - Fall 2022, Fall 2023, Spring 2024.

**DAAD RISE Germany:** Awarded a competitive research internship for Summer 2024; declined due to prior commitments.

**PURA Salary Award, Georgia Tech:** Awarded \$1,500 to conduct faculty-mentored research in Spring 2025.

**PURA Travel Award, Georgia Tech:** Awarded to fund travel for presenting at a professional conference in November 2024.

**Honors Program Student Challenge Fund, Georgia Tech:** Awarded \$500 to support innovative, student-led projects in May 2024.

**PGPP Entrance Exam Scholarship, Georgia Tech:** Covered the cost of the GRE in 2024.

**NSF Travel Award:** Received full funding to present undergraduate research at a professional conference in October 2024.

**NSA Steganography Challenge, HackGT 9:** Won 2nd place among 1,300+ teams and \$400 for the NSA-sponsored challenge "A Picture is Worth One Thousand Words" in October 2022.

## LEADERSHIP EXPERIENCE

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### Undergraduate Research Ambassador

Georgia Tech

*Undergraduate Research Opportunities (UROP)*

*Aug. 2024 – Present*

- Mentored peers in navigating the research process, from finding lab positions to applying for scholarships.
- Led workshops and organized events such as the Undergraduate Research Symposium to encourage greater student involvement in research opportunities.

### Head Sound Engineer

Georgia Tech

*DramaTech*

*Jan. 2023 – May 2023*

- Trained Sound Assistants on how to operate the soundboard, patch-bay area, and audio equipment.
- Worked closely with the Head Sound Designer to implement the soundscape for the musical “Rent.”

### Co-Lead Data Acquisition Engineer

Georgia Tech

*HyTech Racing*

*Jan. 2022 – May 2022*

- Won 3rd place overall in Formula SAE Michigan 2022 with 120+ competitive teams, leading a 10-member sub-team.
- Implemented live telemetry display using AWS, wrote parsers for data analysis, and incorporated sensors on the vehicle.

## VOLUNTEER EXPERIENCE

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### Digital Media Specialist

Usha Kiran

*Non-profit engaged in educating under-privileged students*

*Jan. 2021 – May 2021*

- Gained sponsors by designing and launching a website ([www.ushakiran.org.in](http://www.ushakiran.org.in)).
- Tutored 20+ high-school students on science, math, and english coursework.

## SKILLS

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**Programming:** Java, Python, C, AWS, SQL, MongoDB, Next.js, HTML, React, Figma

**Professional Organizations:** Georgia Tech's Women @ the College of Computing

**Certification:** ITTPC (International Tutor Training Program Certification) II

**Languages:** English (native), Hindi (native), Punjabi (fluent), German (beginner)