Indicate your first choice of specialization for your graduate study and research.

Machine Learning

Awards and Recognitions - Please enter any awards received and the date it was received.

19th Nationally Ranked: National MathCON Competition - 04/2022

3x American Regions Mathematics League Qualifier - 2021-2023

National Merit Scholar, awarded $2,500 scholarship - 05/2023

National Cyber Scholarship, awarded $3,000 scholarship - 11/2022

Publications- Please list any publications (Title, Journal, Date Published, URL if available).

Describe your academic/professional motivation for applying to this program. Draw upon your past and present work and academic experiences as well as aspirations and goals for the future. 500 words.

Throughout my academic and professional career, I've been driven by a deep-rooted passion for solving impactful problems through technology. This interest in solving real-world challenges inspires my pursuit of a career in machine learning - a field which perfectly blends my background in computer science and mathematics with my desire to change lives. With this unwavering ambition, I am determined to further my education through the BS/MS program at Georgia Tech.

My undergraduate education at Georgia Tech has provided me with a strong foundation in computer science. My Threads in Intelligence and Modeling & Simulation have helped me sharpen my learning. Thread-specific coursework like Introduction to Robotics and Perception (CS 3630) taught me the intricate mathematical works of markov decision processing and reinforcement learning.

As a member of the Automated Algorithm Design Lab VIP, I've had the opportunity to work hands-on with the development and utilization of computer-intensive machine learning models. Under Professor Jason Zutty, I've had the opportunity to develop strongly-typed, multiple-objective genetic programming models for Titanic survival analysis using NSGA-II. I've also had the opportunity to utilize ML-based models such as Random-Forests and Support Vector Machines to solve problems such as One-Max and N-Queens. Working with EMADE, the lab's in-house evolutionary framework, has taught me the methodology in which industry-level machine learning is conducted. I'm currently a member of the LLM Point Cloud subteam, which will be working with optimizing existing technologies that are regularly used in self-driving technology. I'll be working directly with tools such as Hugging Face and PointNet++, and it is our hope to publish a research paper by the end of the year.

Furthermore, my extracurricular endeavors have helped broaden my horizons with respect to the field of computer science. As a part of Georgia Tech's Big Data Big Impact (BDBI), I had the opportunity to work on two ML projects that work within the field of healthcare. I worked on a Parkinson Disease Detection model that employed various machine learning techniques to determine the likelihood that a person is suffering from Parkinson's Disease. I also collaborated with Emory's HITI Lab to develop an abnormality-screening CNN for breast cancer detection, which categorized screenings into various BI-RAD levels. This issue is especially close to my heart because my mother faced breast cancer.

My academic experience at Georgia Tech and my professional experiences with the Automated Algorithm Design Lab VIP and BDBI have given me the skill set and passion for pursuing a career in machine learning. I am enthusiastic about pursuing a higher education in machine learning in order to delve even deeper into the fields of healthcare and self-driving. I believe these spaces have the greatest potential to transform the world, and with a Masters in Machine Learning from Georgia Tech, I'm confident I can achieve my goals.

Tell us why you want to pursue your graduate education at Georgia Tech. Consider including questions or issues that inspire you, experiences that have shaped your professional interests, and why you think that Georgia Tech is well-suited to help you. Include information that may assist faculty in evaluating your preparation and aptitude for graduate education at Georgia Tech. 500 words.

I am eager to continue my education at Georgia Tech through the BS/MS program. I wish to build upon the foundation I've established as an undergraduate and continue my educational pursuits in machine learning. As a returning student at the College of Computing, I'll continue exploring advanced coursework, pursuing high-impact research, and forging connections with top-notch faculty and peers.

I've been fortunate to take rigorous classes during my undergrad, and I'm ready to challenge myself further with the in-depth learning opportunities offered by the BS/MS program. The BS/MS program will deepen my technical knowledge by enabling me to take advanced graduate level coursework such as Machine Learning (CS 7641) and Advanced Graph Algorithms (CS 7510). By cross-listing these courses during my undergraduate education, I will be exposed to a greater breadth of learning within these advanced topics.

Additionally, Georgia Tech's Master's program is renowned for its cutting-edge research opportunities and top-notch faculty. As a BS/MS student, I wish to pursue the research option in order to deeply specialize into a subfield of machine learning of my choosing. I'll have access to the College of Computing's immense resources, including a vast network of expert researchers that can assist me in my endeavors. Pursuing my Master's at Georgia Tech will enable me to continue working at the Automated Algorithm Design Lab. By doing so, I'll have the opportunity to further my research in the LLM Point Cloud subteam. Additionally, I'll be able to work on other projects like object and image recognition in the medical subteam.

Georgia Tech also offers an unrivaled selection of extracurricular opportunities. I'll get to continue working on high-impact projects as a member of Georgia Tech's Big Data Big Impact club, as well as pursue new club endeavors such as RoboJackers, where computer vision is utilized in order to navigate their Mars Rover.

Being a Yellow Jacket has given me the opportunity to foster connections with other high-achieving students. I have truly built a community for myself at GT, and as an admitted BS/MS student at Georgia Tech, I'll continue forging new connections and making new ones.

I am inspired by Georgia Tech's mission of using "advancing technology to improve the human condition." I believe that Georgia Tech is the perfect place for me to realize my vision of changing the world using machine learning. With access to top-tier resources, cutting-edge research opportunities, and an innovative community, I am excited to continue my journey in computer science at Georgia Tech.

How do you envision your career progressing after earning this degree? 100 words.
After earning a Master's in Computer Science with a Specialization in Machine Learning at Georgia Tech, I intend to be a machine learning researcher in either the industries of healthcare or self-driving.

(Optional) If applicable, explain discrepancies or weaknesses on your record, such as employment gaps, low grades, letters of recommendation that are not from a recent supervisor, unusual work experience or career paths, and additional challenges you would like the admissions team to know. 250 words.

(Optional) Upload a sample of written work in English that provides evidence of creative and critical thinking, the quality of your writing, and the ability to convey complex material clearly.

- **Your writing sample should draw on evidence and/or external sources to make an argument.**
- **A term paper, class essay, senior/honors thesis, thesis chapter, or research project manuscript/publication is ideal, but a work report that you completed on the job is also acceptable.**
- **At the top of your writing sample, or on an additional cover page, include a couple of sentences to describe the origins of your writing sample, such as a class assignment, thesis, or work project.**
- **For coauthored pieces, clarify your contribution.**

Minimum two to three pages, maximum 20 pages
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