BRYAN ZHAO

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OBJECTIVE

Innovative computer science graduate student leveraging 12+ months of industry experiences and strong technical abilities from 8+ projects. I switched from engineering to CS because I wanted to design the brains rather than the brawn of systems/devices. Prepared to excel in a summer 2023 internship related to machine learning, robotics, and/or software development.

EDUCATION

GEORGIA INSTITUTE OF TECHNOLOGY **Atlanta, GA**

Master of Science in Computer Science, GPA: 4.00 *Expected Dec 2023*

- Minor: Machine Learning
- Courses: Algorithms, Interactive Robot Learning

Bachelor of Science in Mechanical Engineering, GPA 3.98 *May 2022*

- Minor: Computer Science
- Courses: Robot Perception & Planning, Robot Design & Dynamics, Machine Learning (ML), Artificial Intelligence (AI), Object Oriented Programming, Data Structures, Computer Architecture, Circuits

EXPERIENCE

CORE ROBOTICS LABORATORY **Atlanta, GA**

Graduate Research Assistant | C++, ROS, CV, Linux *Aug 2022 – Present*

- Submitted a conference paper (pending review) with a team of 10+ students presenting development of a tennis-playing wheelchair robot used to better understand human-robot collaboration in the context of sports: Athletic Mobile Manipulator System for Robotic Wheelchair Tennis, Z. Zaidi et al. (https://arxiv.org/abs/2210.02517)
- Developing Robot Operating System (ROS) packages in C++ for a camera system to triangulate the position of a tennis ball in real-time using NVIDIA Jetsons (Linux distributed computing devices), resulting in 1.5X quality and 2X framerate of video data over existing systems to ultimately improve the tennis ball return rate of the robot
- Creating a deep learning model using PyTorch to predict the state of a quadcopter from control inputs and sensor data in real-time, enabling the quadcopter to continue stable flight even when it is damaged and flight dynamics are altered

BMW GROUP **Greenville, SC**

Software Engineering Intern | Python, AWS, LLM *May 2022 – Aug 2022*

- Built a Python pipeline in AWS to train OpenAI's 175B-parameter Large Language Model (LLM) called GPT-3 that automatically classifies business documents, saving $500k and achieving 98% accuracy (+30% versus existing methods)
- Created Python scripts with AWS Textract/Translate to extract text from 500+ German PDF documents for model training
- Developed the backend and API for a 66B-parameter LLM to be used on-premises, enabling processing of confidential data

RAYTHEON TECHNOLOGIES **East Hartford, CT**

Research and Development Intern | LabVIEW, NX, KiCAD, UI/UX *May 2021 – Aug 2021*

- Developed the user interface, state machine transition logic, and PID temperature control in LabVIEW for mechanically testing airplane engine parts, resulting in a system that operated continuously and autonomously for 500+ hours
- Automated 3D modeling processes to generate CAD renders, reducing time spent on modeling by 80% from 10 to 2 weeks

ANDURIL **Marietta, GA**

Research and Development Intern | Solidworks, Manufacturing *Jan 2021 – May 2021*

- Engineered a new testing program for the next generation of drone and launcher systems to attain a 330% increase in launch energy, creating the Solidworks design, plan for manufacture and assembly, data collection system, and testing procedures
- Designed and managed a MS Access database to track customer requirements on a $1M+ government contract

GEORGIA TECH RESEARCH INSTITUTE **Atlanta, GA**

Research and Development Intern | ANSYS *July 2020 – Aug 2020*

- Contributed to a research paper analyzing bio-inspired, slip-resistant materials for gloves, robotic traction, shoe soles, etc. by generating mechanical software models in ANSYS simulating animal traction on wet surfaces
- Researched novel computational techniques to simulate 3 key behaviors to understand water evacuation under animal paws

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EXOSKELETON & PROSTHETIC CONTROLS LABORATORY **Atlanta, GA**
Undergraduate Research Assistant | Solidworks *Jan 2019 – May 2019*

- Conducted trial investigations on a hip exoskeleton to troubleshoot stepper motor performance and perform study on timing of exoskeleton assistance during the user's walking gait on ramps and stairs of varying steepness at varying speeds
- Modeled exoskeleton parts to assist in the development of a 20% more compact design

NAVAL SUBMARINE MEDICAL RESEARCH LABORATORY **Groton, CT**
Research and Development Intern | Solidworks, Rapid Prototyping *May 2017 – Aug 2017*

- Prototyped a remote-controlled, Ø2ft X 6ft blimp contributing to research in a novel concept in lighter-than-air surveillance
- Developed a new method for manufacturing an air-tight blimp envelope from thick metalized polymer film

PROJECTS

ATARI AI TRAINER, *Project Lead | Python, PyTorch, OpenAI Gym, CV, NLP, RL* *Aug 2022 – Present*
Creating a framework to train an AI to play Atari video games using verbal directives, facial expressions, and numerical input

NASA JPL SENIOR CAPSTONE, *Software & Hardware Lead | C, Arduino, Solidworks* *Aug 2021 – Dec 2021*
Developed the C-based Arduino controller for a space robot which will gather extraterrestrial liquid samples in search of life

MANUFACTURING DEFECT CLASSIFIER, *Undergraduate Research Assistant | Java* *Aug 2021 – Dec 2021*
Scripted an image classifier using Java in Weka to inspect and classify scans of metal 3D printed parts for porous defects

NHL PLAYOFF PREDICTOR, *Project Lead | Python, Tableau, Scikit-learn* *Aug 2021 – Dec 2021*
Processed and visualized data to train models that predict NHL playoff teams with over 80% accuracy using limited data

ELECTRIC FORMULA SAE, *Project Lead | Solidworks, Project Management* *Aug 2019 – March 2020*
Led a team of 5 to design a mount for dynamometer testing of the electric motor, contributing to data collection initiatives

TEDxGEORGIATECH, *Engineer & Graphic Designer | Solidworks, Adobe Illustrator* *Aug 2018 – Dec 2018*
Designed and created TED stage letters and promotional materials for conferences with 300+ students and professional speakers

TEACHING & MENTORING

CS 7641: MACHINE LEARNING, *Graduate Teaching Assistant | Python, LaTeX, Jupyter* *Jan 2022 - Present*
Enhanced course efficacy by creating assignments in LaTeX and Python Jupyter Notebooks for 700+ students/semester

ME 3340: FLUID DYNAMICS, *Undergraduate Teaching Assistant | Modeling, Mathematics* *Aug 2020 – Dec 2020*
Created and applied grading rubrics for assignments on fluid mechanics to serve 50+ students for 3 hours/week

GEORGIA TECH EUROPE, *Undergraduate Resident Assistant | Management* *May 2019 – Aug 2019*
Supervised and ensured the safety of a 120+ student dorm during a study abroad program in Metz, France

LEADERSHIP

180 DEGREES CONSULTING **Atlanta, GA**
Co-Founder, Recruitment Director | Project Management, UI/UX *March 2020 – May 2021*

- Co-Founded the Georgia Tech chapter of 180DC, the #1 largest international pro-bono student consultancy for nonprofits
- Collaborated with Red Cross to digitize their paper-based vehicle reservation system to a completely online user portal
- Launched the creation, management, and promotion of the organization's webpage to garner 500 monthly visitors

INVENTION STUDIO MAKERSPACE **Atlanta, GA**
Machining Peer Instructor | Rapid Prototyping, Manufacturing *Jan 2020 – May 2021*

- Managed 3,000 ft^2 makerspace that accommodates 500+ students weekly during volunteer shifts of 3 hours/week
- Instructed up to 5 users simultaneously on how to safely use rapid prototyping techniques and manufacturing equipment

SKILLS

Languages	Python (Proficient), MATLAB (Proficient), Java (Intermediate), C/C++ (Intermediate), HTML/CSS (Basic)
Tools	PyTorch, Scikit-learn, Pandas, Plotly, Jupyter, Tableau, LaTeX, Conda, Git/GitHub, AWS, Linux, ROS
Other	Agile, Arduino, NVIDIA Jetson, Solidworks, KiCAD, Simulink, ANSYS, Mechatronics, Manufacturing
Interests	Machine Learning, Data Science, Robotics, Deep Learning, Computer Vision, NLP, Reinforcement Learning