

# Jack D. Carson

Interested in the intersection of drug development, deep learning, and physics. | [jdcarson@mit.edu](mailto:jdcarson@mit.edu) | [quothbonney.github.io](https://quothbonney.github.io)

## EDUCATION

<b>Massachusetts Institute of Technology</b> <i>Electrical Engineering and Computer Science, Physics</i> • GPA: N/A. Relevant Coursework: Linear Algebra and Optimization, Probability and Random Variables, Intro to Algorithms, Mathematics for Computer Science, ML for Biological Systems, Modelling with ML, Differential Equations.	Cambridge, MA 2024 — Present
<b>University of Tulsa</b> <i>Concurrent Student, Electrical Engineering</i> • GPA: 4.0/4.0. Only concurrent student taking UTulsa engineering courseload	Tulsa, OK 2022 — 2024
<b>Booker T. Washington High School</b> <i>High School Diploma</i> • Weighted GPA: 4.78/5.0. Unweighted GPA: 4.0/4.0. Valedictorian.	Tulsa, OK 2020 — 2024

## RESEARCH EXPERIENCE

<b>Undergraduate Researcher</b> MIT CSAIL (Computer Science and AI Laboratory) • Only first-year student selected to join the Regina Barzilay Group, a leading lab in AI for life sciences. • Working under Peter Mikhael and Itamar Chinn on foundational models for metabolomics.	2025 — Present Cambridge, MA
<b>Undergraduate Researcher</b> MIT McGovern Institute for Brain Research • Developed generative models for 3D fMRI denoising and protein biomarker synthesis and designed mathematical optimization techniques for in vivo biofeedback systems. Worked under Dr. Itay Fayer and Kevin Chung.	2023 — 2025 Cambridge, MA
<b>Student Researcher and Developer</b> University of Tulsa Vehicle Autonomy and Intelligence Laboratory • Lead author on DASC 2024 conference paper. Developed systems under NASA/FAA grant funding	2022 — 2023 Tulsa, OK

## EXTENDED RESEARCH AND PROFESSIONAL EXPERIENCE

<b>Research Intern (Incoming Summer 2025)</b> Memorial Sloan-Kettering Cancer Center • Chosen as only first-year for extremely selective MSKCC Computational Biology Summer Program to work in lab of Dr. Christina Leslie on ML for gene expression and transcriptomics.	2025 — 2025 New York, NY
<b>Research Fellow</b> MIT Social and Ethical Responsibilities of Computing • Selected as one of five first-year students for interdisciplinary research fellowship focused on technical AI alignment • Applying statistical physics to model language models' long-range behavior; paper under ICML 2025 review. • 1/7 presenters selected for oral research presentation at MIT EECS Town Hall.	2024 — Present Cambridge, MA
<b>AI Policy Delegate</b> United Nations Summit of the Future • Represented university to governmental organizations and NGOs to advance UN sustainable development goals in AI.	2024 — 2024 New York, NY

## HONORS AND AWARDS

- **Research Science Institute (RSI) Scholar**, 2023 - Widely held as highest international STEM honor for high school students
- **White House Presidential Scholar**, 2024 - Selected by President Biden as one of 161 outstanding high school seniors
- **Priscilla King Gray Fellow**, 2024 - Only freshman selected for MIT's most distinguished public service fellowship
- **Third Place, MIT Brain Computer Interface Competition**, 2024. Designed a real-time EEG system for controlling vehicle.
- **Many Native American Scholarships**, Cobell Scholarship, Aristocrat Scholarship, Accenture Scholarship, Indigenous Peoples Education Fund Scholarship. Oklahoma Indian Honor Society 2022-2025.

## PUBLICATIONS

<b>First Author</b> , A Novel Set Partition Coding Algorithm for GeoTIFF Digital Elevation Models	Proceedings of DASC 2024
<b>First Author</b> , A Stochastic Dynamical Theory of LLM Self-Adversariality...	Under Review
<b>First Author</b> , Language Model Sentiments Follow Approximate Markovian Dynamics	Under Review
<b>Author</b> , Maintaining Electrochemical Performance of Flexible ITO-PET Electrodes...	Published in ACS Omega
<b>Author</b> , The JDVC Multivariable Calculus Cookbook	Published on Amazon

## SKILLS

- **Programming:** C/C++ (5 years), Python (5 years), Rust (3 years), PyTorch (3 years) Software Design, High Performance Computing, GPU Programming, Scientific Programming & Simulation, Numerical Computation, some JavaScript/TypeScript and MatLab
- **Laboratory Skills:** Biochemistry (BL1, BL2), Analytical Chemistry, Protein Synthesis, Protein Purification
- **Other Skills:** Research Writing, Scientific Writing, Mathematical Optimization, Mathematics for Machine Learning, Stochastic Processes

## &c.

- Two-time letterman in varsity football. Performed twice at Carnegie Hall. Track-certified in motorcycle racing. Studied music theory at IRCAM and UVA in middle school. Personal interests span drug discovery, classical ballet, condensed matter theory, 20th-century opera, graph neural networks, music theory, photography, the poetry of T.S. Eliot, and molecular dynamics. Amateur violinist, speaks some chinese, and writes poetry.