

MASON CAO

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EDUCATION

Lambert High School, Suwanee, GA Expected May 2027

- Weighted GPA 4.62 | Top 3% of a class of 860 | SAT 1540 | 16 AP and 9 dual-enrollment courses
- Georgia Tech dual enrollment: CS 1301 Intro to Computing, CS 1331 Object-Oriented Programming, Linear Algebra, Multivariable Calculus. Georgia State University dual enrollment: Introduction to Information Systems, Quantitative Reasoning, and other electives. University of North Georgia: CYBR 2050 Cybersecurity.

RESEARCH

Independent Researcher, Project AERIS 2025 to Present

Mentored by Dr. Annalisa Bracco, Georgia Tech Earth and Atmospheric Sciences; Senior Scientist, CMCC

- Built a verification layer testing whether physics-aware cross-source corroboration can evaluate AI air-quality claims without expert labeling, checking model explanations against ground, weather, and satellite data.
- AGU Fall Meeting 2026 abstract submitted with Dr. Bracco; initiated the mentorship by cold-emailing 20 faculty.

Research Intern, George Mason University Exoplanet Research Summer 2026

- Applied Bayesian and time-series methods to NASA TESS and JWST data under Dr. Peter Plavchan; first-authored manuscript on refining characterization methods for TOI 3505.01.

Selected Scholar, NLP Track, Stanford Pre-Collegiate Summer Institutes (SAIL) Summer 2026

- Built GPT-style language models in Hugging Face; solo capstone browser-focus classifier (Word2Vec, logistic regression) with leakage-safe day-grouped splits.

LEADERSHIP AND SERVICE

Secretary and Director of Operations, First Step (student-founded environmental nonprofit) 2023 to Present

- Co-led a \$5,000 Bloomberg grant funding Georgia Tech microplastics research; scaled 300+ volunteers across 250+ events.

Founder and Curriculum Director, Sharon Forks Library Summer Coding Camp Summers 2023 to 2025

- Founded a free CS camp and wrote its curriculum; taught 52 students Scratch, logic, and debugging (100+ projects shipped).

Varsity Captain, Lambert HS Swim and Dive; Senior Select, Swim Atlanta 2023 to Present

- GHS A 6A state qualifier; Champ A cuts; raced Speedo Best of the South and Georgia Senior State. 18-20 hours per week, year-round.

Section Leader and Principal Bass Clarinet, Lambert HS Wind Ensemble 2023 to Present

- Lead sectionals and mock All-State auditions for younger clarinetists; invited to perform at the Midwest Clinic and NCBF.

WORK EXPERIENCE

Pool Manager, AMS Pools, Fulton and Forsyth County, GA Summers 2023 to Present

- Promoted from lifeguard to head guard to 1 of 6 managers over 8 pools and 100+ guards; scheduling, chemical logs, CPR drills. \$20.50/hr.

SELECTED TECHNICAL PROJECTS

Green Spark AI: turns school energy, water, waste, and food data into a ranked, costed climate-action plan. USAII 2026.

FreshTrack: deployed pantry app cutting food waste with barcode scanning, expiry analytics, and recipes. 100+ users.

Nova Core: framework orchestrating 8 specialized AI agents for structured data and sustainability workflows.

Detox: macOS focus tool shipped via Homebrew and DMG; island-survival mechanic tied to screen-time goals.

Kaggle notebooks: published machine-learning analyses of environmental sensor data. 80+ upvotes, 20 forks.

HONORS AND AWARDS

- The Earthshot Prize 2026 (The Royal Foundation), Clean Our Air:** advanced to the Top 150 of 2,500+ global nominations.
- Responsible AI Award,** one of five high school winners from 808 qualifying teams, USAII Global AI Hackathon 2026.
- USACO Gold Division (2x),** Grades 10 and 11.
- Codeforces Candidate Master,** rating 1900+.
- 7th Place, Networking (IT) Infrastructures,** FBLA National Leadership Conference.
- USESO High Honors,** US Earth Science Olympiad National Open Exam.
- DECA State Champion,** Entrepreneurship Team Decision Making; ICDC International Qualifier.
- 5x GMEA All-State Musician,** Soprano and Bass Clarinet.
- Gold Medal, International Environmental Science Olympiad,** Top 10% Globally
- College Board Awards,** 2x AP Scholar with Distinction, 2x National Recognition Award

AFFILIATIONS AND TECHNICAL SKILLS

Affiliations: Google Developer Program; National Technical Honor Society; Spanish Honor Society (peer tutor); Key Club

Languages: Python, C++, Java, C, TypeScript, JavaScript, SQL.

Frameworks and tools: React, Next.js, FastAPI, PostgreSQL, Pandas, Hugging Face Transformers, Git, Tailwind CSS.

Methods: Bayesian inference, time-series analysis, anomaly detection, ML output verification, algorithm design.