SONGYUAN LIU

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EDUCATION

Georgia Institute of Technology, Atlanta GA
Bachelor of Science in Computer Science, May 2027

Chongqing Yucai Secondary School, Chongqing, China
AP Curriculum--College Board's AP Scholar with Distinction, June 2022 GPA: 4.0/4.0

Technical skills
Programming languages (subject to change):

1. Java
2. Python
3. MATLAB
4. C/C++

Website-building languages (subject to change):

1. HTML
2. CSS
3. SCSS
4. JavaScript

WORK EXPERIENCE

HIMCM Pre-Flight Tutor
Prepped beginners in High School Mathematical Contest in Modeling for basic MATLAB coding skills, problem-solving skills, and writing in formal paper.

USAD Speech Tutor
Lectured on how to write a public speech, revised on students' essays, reviewed their public speech in the contest of United States Academic Decathlon.

PROJECTS/Leadership

[Leadership] Smart Kitchen Waste Pickup Program, Python
Website link: https://ecoist-ste.github.io/promotion-website/
Designed a three-parties and three-factors system used to increase the efficiency of municipal waste collection process by reducing fuel consumption and unpleasant odor resulted from excessively accumulated garbage in a waste bin—Three parties: 1) data collection, 2) algorithm operation, and 3) user interface. Three factors: total distance traveled by garbage truck, height of waste in bin, and length of time waste was disposed (last 2 are from sensors installed in the bins). On average of 20 trials conducted on the system, in theory it can reduce CO_2 emission by 425 kg per year.

[Leadership] Solution to Priority of Funding Projects Based on Genetic Algorithm (GA), MATLAB & Lingo
Attended lectures on advanced mathematics (linear algebra, prioritization, mathematical modeling, etc.), led 3 teammates in designing computational model to make optimal schedule for funding plant conversation projects that takes info about all projects as input and priority associated with each as output. Our algorithm resulted in a maximum of 11 million dollars profits per year out of a period of 25 years.

[Leadership] Chongqing Eagle Project (Chongqing Education Bureau), C++
A lectures in communication physics and C++ programming from Prof. Di Ke from Chongqing University of Posts and Telecommunications. led 2 teammates in utilizing infrared sensor technology to create intelligent shopping carts to enhance shopping experience. Crafted a prototype cart that follows a person's gestures. Published a report on a Chinese academic journal, ISSN 1003-9716.

Investigation on Excitation and Resonance of Airflow in Corrugated Cavity, Python
Investigated the phenomenon of corrugated cavity making sounds under certain conditions through laboratory experiments and Python statistical analysis to explain why when kids are playing with swinging tube it will sometimes make "melody" . Paper name: "Singing" Tube: Excitation and Resonance of Airflow in Corrugated Cavity. Presented our work to Tsinghua University professors.

HONORS AND AWARDS

- COMAP's 2020 High School Mathematical Contest in Modeling, Finalist (Top 7%)
- S.T. Yau High School Science Award, Bronze Award (6th place)
- Youth Impact Communication Initiative, Excellent Award
- USAD China In-Country Competition, 6th Highest Overall Score
- Future Business Leaders of America-Broadcast Journalism Category, 2nd place
- High School Entrepreneurship Competition, Third Prize