

ERICA SYDNEY CHIANG

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EDUCATION

- 8/2019 - present **Carnegie Mellon University** (Pittsburgh, PA), Class of 2023
Major in Computer Science, Minor in Human-Computer Interaction
- Cumulative GPA: 3.94 / 4.00
 - Andrew Carnegie Society Scholar: top 40 selected of 2000 students

RESEARCH EXPERIENCE

- 9/2022 - present **Research Assistant (Social Computing), CMU Computer Science Department**
Advised by Professor Kathleen Carley (Senior Honors Thesis)
- Analyzing Twitter data to identify patterns in the linguistic and psychological cues that different actors tend to use, in order to understand how this shapes their influence over online communities
- 9/2021 - 8/2022 **Research Assistant (Networking: Theory), CMU Computer Science Department**
Advised by Professors Justine Sherry and Weina Wang
- Led a project to explore the theoretical implications of using job size estimation heuristics in scheduling algorithms, to characterize heuristic quality and robustness in protecting systems against algorithmic complexity attacks (ACA)
- 1/2021 - 9/2021 **Research Assistant (Networking: Security), CMU Computer Science Department**
Advised by Professors Justine Sherry and Weina Wang
- Studied packet-scheduling algorithms that mitigate the damage of algorithmic complexity attacks
- 8/2020 - 12/2020 **Research Assistant (Bias in ML), CMU Human-Computer Interaction Institute**
Advised by Professors Motahare Eslami, Ken Holstein, Jason Hong, Hong Shen
- Studied how people search for, identify, and respond to bias in machine learning algorithms, with the goal of creating a crowd audit platform
 - Developed research questions and interview protocols; carried out interviews and data analysis
- 9/2019 - 12/2019 **Lagrange Point Modeling**
Advised by Professor Curtis Meyer
- Designed and performed a simulation for movement around the Earth-moon L4 Lagrange point; presented research to CMU physics faculty and graduate students

PUBLICATIONS AND PRESENTATIONS

1. Atre N, Sadok H, **Chiang E**, Wang W, Sherry J. *SurgeProtector: Mitigating temporal algorithmic complexity attacks using adversarial scheduling*. SIGCOMM '22: Proceedings of the ACM SIGCOMM 2022 Conference (Amsterdam). August 2022, Pages 723-738.
2. **Chiang E**, Atre N, Sadok H, Wang W, Sherry J. *Robust Heuristics: Attacks and Defenses for Job Size Estimation in WSJF Systems*. SIGCOMM '22: Proceedings of the ACM SIGCOMM 2022 Conference (Amsterdam). August 2022, Poster Presentation and Student Research Competition.

AWARDS

- 2022 **Andrew Carnegie Society Scholar**
- 40 out of ~2000 students
 - Selected by Dean and Professors for academic excellence and leadership
- 2022 **ACM Student Research Competition 2nd Place**

- 2022 **Cornell, Maryland, Max Planck Pre-Doctoral Research School (Germany)**
- Received invitation and funding to attend a week-long Computer Science research program at Max Planck Institute for Software Systems
- 2022 **Johns Hopkins Applied Physics Laboratory Positive Influence Award**
- 1 out of ~200 interns selected for exceptional performance and leadership
- 2019-2022 **Dean's List (High Honors)**
- Fall 2019, Fall 2020, Spring 2021, Spring 2022

PROJECTS/INTERNSHIPS

- Summer 2022 **Computer Science Intern, Johns Hopkins Applied Physics Laboratory (Laurel, MD)**
- Chief Digital and Artificial Intelligence Office aircraft readiness model: testing, evaluation, and benchmark model development
 - Airborne Collision Avoidance System: designed and deployed a full stack web application for use in the development of ACAS software
 - Frequent presentations to various interest groups: development and testing teams at APL, collaborators at MIT Lincoln Labs, and project sponsors
- Summer 2021 **Software Engineering Intern, NASA Jet Propulsion Laboratory (Pasadena, CA)**
- Developed software to monitor data traveling through NASA Deep Space Network
 - Created webpage for visualizing and accessing relevant metadata in real time, intended for real world use on vehicles such as NASA Mars Perseverance Rover
- Spring 2020 **FRAMEFIT Workout App (tinyurl.com/esctermproj)**
- Created original wireframe body-tracker with movement analysis features, used analysis to generate custom workouts & provide feedback on exercise performance
 - One of top 11 projects (out of ~500) selected for CMU term project showcase

TEACHING/MENTORING

- 2022-2023 **Mentor, Society of Women Engineers and School of Computer Science**
- Paired with a total of 8 mentees, act as an academic mentor and organize get-togethers
- Fall 2021 **Teaching Assistant, 151-151 (Mathematical Foundations for Computer Science)**
Instructor: Professor John Mackey, CMU School of Computer Science
- Taught two recitation sections per week and designed exercises for intuition and understanding
 - Held weekly Office Hours
 - Prepared & taught exam review sessions (to ~200 students each time)
- 2021-2022 **Orientation Counselor, CMU First-Year Orientation**
- Mentored 20 freshmen during their transition to college and throughout their first year at CMU, facilitated discussions about diversity, inclusivity, well-being, and identity
- 2016 - 2019 **Physics Lab Educator, Oregon Museum of Science & Industry**
- Developed new lab demonstrations and experiments for museum visitors, worked with children to teach physics concepts through visual and interactive activities

EXTRACURRICULAR INVOLVEMENTS

- 2019 - present **CMU C# Choir**
- **President ('21-22), Vice President Internal ('20-21), Design Chair ('19-20, '22-23)**
 - Oversee all three branches of the largest vocal music club at CMU (50+ people)
 - Set organizational vision and goals, lead weekly board meetings, organize events to foster community, and conduct processes such as member onboarding and elections

- 2019 - present **CMU Sweepstakes ("Buggy")**
 - **Women's Push Captain (2022-23):** Recruit, organize, and lead team of runners to push buggies at annual Spring Carnival
 - **Mechanic:** Build and maintain non-electric vehicle for annual race
- 2019 - present **CMU Taiwanese Students Association**
 - **Secretary (2021-22):** Organized event scheduling, room bookings, weekly officer meeting agendas, organization-wide communication from officer team through email announcements and calendar
 - **Freshman Representative (2019-20):** Wrote and organized skit of 30+ actors for annual Culture Night, planned organization-wide ski trip
 - Worked on murals (painting), crafts, and building structural foundation for TSA booth
- 2015 - 2021 **CMU Club Soccer Team & Lake Oswego High School Varsity Soccer**
 - College: 2 practices a week, competed in weekend games against other soccer teams
 - High School: Competed in tournaments along West Coast, led summer team practices
- 2018-2019 **Student Body Vice-President, Lake Oswego High School**
 - Organized and delegated tasks to lead all student government officers in planning school activities, implemented new policies, and developed student-staff relationships
- 2015-2019 **Lake Oswego High School Varsity & Club Track and Field**
 - **Team Captain (2019)**
 - 100m, 200m, 400m, 4x100m sprints
 - Oregon Class 6A (largest division) All-State First Team, high school record holder

SKILLS

- **Technical:** Proficient in C, Python, Java, SML, HTML, JavaScript, CSS; Intermediate in MATLAB, Arduino
- **Art and Design:** <https://ericachiang.wixsite.com/website-1>
 - National Scholastic Art Awards 2019: 1 Gold Key, 2 Silver Keys