ERICA SYDNEY CHIANG

eschiang@andrew.cmu.edu ◇ erica-chiang.github.io

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 Motahhare Eslami, Ken Holstein, Jason Hong, Hong Shen

- Developed research questions and interview protocols to study how people search for, identify, and respond to bias in machine learning algorithms, with the goal of creating a crowd audit platform

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 Engineer 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

8/2022 - present **Mentor,** Society of Women Engineers and School of Computer Science
- Act as an academic mentor and organize get-togethers with a total of 8 mentees

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)

Fall 2021 **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