Emily Tseng

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Research Interests

I study how sociotechnical systems for human-AI collaboration in care work can be built to emphasize agency, privacy, and equity for patients and providers alike. Drawing on approaches from human-computer interaction, computer security and privacy, and natural language processing, I design, build, deploy and evaluate systems that aim to widen access to healthcare and improve wellbeing for marginalized people.

Education

2019 - present *Ph.D. student, Information Science,* Cornell University
Advised by Deborah Estrin and Nicola Dell.

2017 - 2019 *M.S. Information Systems, Health Tech specialization,* Cornell Tech GPA: 3.9/4.0
Relevant coursework: Applied Machine Learning, Deep Learning, Natural Language Processing, Human-Computer Interaction, Interactive Device Design.
Advised by Deborah Estrin and Nicola Dell.

2010 - 2014 *B.A. Ecology & Evolutionary Biology,* Princeton University GPA: 3.5/4.0
Concentration in Global Health and Health Policy. Studied epidemiology, journalism and social policy with a focus on predictive modeling of infectious disease epidemics.
Advised by Bryan Grenfell and Tiffany Bogich.

Publications

1. **Tseng, E.,** Bellini, R., McDonald, N., Danos, M., Greenstadt, R., McCoy, D., Dell, N. and Ristenpart, T. *The Tools and Tactics Used in Intimate Partner Surveillance: An Analysis of Online Infidelity Forums.* 29th USENIX Security Symposium. pdf. online. ***Distinguished Paper Award. Internet Defense Prize, third place.***

2. Bellini, R., **Tseng, E.,** McDonald, N., Greenstadt, R., McCoy, D., Ristenpart, T. and Dell, N. *"So-called privacy breeds evil": Narrative Justifications for Intimate Partner Surveillance in Online Forums.* Proceedings of the ACM on Human-Computer Interaction, Issue CSCW. 2020. (Accepted).

3. Sterling, MR, **Tseng, E,** Poon, A, Cho, J, Avgar, AC, Kern, LM, Ankuda, CK, Dell, N. *Experiences of Home Health Care Workers in New York City During the Coronavirus Disease 2019 Pandemic: A Qualitative Analysis..* JAMA Internal Med. Published online August 04, 2020. pdf. online.

4. **Tseng, E.,** Okeke, F., Sterling, M., and Dell, N. *"We can learn. Why not?": Designing Technologies to Engender Equity for Home Health Aides.* ACM Conference on Human Factors in Computing Systems (CHI '20). pdf. online.

5. Sterling, M. R., Dell, N., Piantella, B., Cho, J., Kaur, H., **Tseng, E.,** Okeke, F., Brown, M., Leung, P. B. K., Silva, A. F. , Shaw, A. L., Kern, L. M. *Understanding the Workflow of Home Healthcare for Patients with Heart Failure: Challenges and Opportunities.* Journal of General Internal Medicine. pdf. online.

6. Freed, D.*, Havron, S.*, **Tseng, E.,** Gallardo, A., Chatterjee, R., Ristenpart, T., and Dell, N. *"Is my phone hacked?" Analyzing Clinical Computer Security Interventions with Survivors of Intimate Partner Violence.* Proceedings of the ACM on Human-Computer Interaction: Vol. 1 Issue CSCW. 2019. pdf. online. ***Best Paper Honorable Mention.***

7. Okeke, F., **Tseng, E.,** Piantella, B., Brown, M., Kaur, H., Sterling, M., and Dell, N. *Technology, Home Health Care, and Heart Failure: A Qualitative Analysis with Multiple Stakeholders.* ACM SIGCAS Conference on Computing & Sustainable Societies (COMPASS '19). pdf. online.

Awards & Honors

2020	Distinguished Paper Award, USENIX Security Symposium
2020	Facebook/USENIX Internet Defense Prize, Third Place
2020	CRA-WP Grad Cohort for Women
2019	Best Paper Honorable Mention, ACM CSCW
2019	Advocate of New York City Award *Recognition from the Mayor's Office to End Domestic & Gender-Based Violence.*
2019	Cornell University Information Science Department Fellowship *One-year doctoral fellowship awarded for exceptional preparation & promise (top 1.5% of applicants).*
2017	Cornell Tech Merit Scholarship *Two-year merit award for Master's-level study.*
2014	Senior Thesis Award - Modeling, Princeton University Department of Ecology & Evolutionary Biology *Recognition for that year's top senior thesis with a primary focus on mathematical modeling.*
2014	Society of Sigma Xi (scientific research honor society), Princeton University
2010	Valedictorian, Harpeth Hall School

Current Research

Understanding patient-therapist rapport in online psychotherapy
PIs: Tanzeem Choudhury, Ph.D. (Cornell Tech) and Cristian Danescu-Niculescu-Mizil, Ph.D. (Cornell University)

- Investigating the use of generative modeling techniques in NLP to understand rapport between patients and therapists on a widely used platform for text-based psychotherapy.

Understanding online abuser communities in intimate partner surveillance (IPS)
PIs: Nicola Dell, Ph.D. and Thomas Ristenpart, Ph.D. (Cornell Tech)

- Built a web scraping pipeline collecting data from public forums where abusers discuss IPS tactics.
- Co-authored paper analyzing the specific tactics recommended within these fora, as well as their social dynamics **[1].**
- Co-authored paper analyzing the narrative justifications for abuse employed by forum-goers **[2]**.

Clinical computer security for victims and survivors of IPV
PIs: Nicola Dell, Ph.D. and Thomas Ristenpart, Ph.D. (Cornell Tech)
- Conducting a field study of a "tech clinic" intervention for victims of IPV in New York City, in partnership with the Mayor's Office to End Domestic and Gender-Based Violence.
- Co-authored paper contextualizing resultant learnings in the broader literature on technology for social justice and computer-supported consultative work **[6]**.

Community-engaged technology design to support home health aides caring for adults with heart failure
PIs: Nicola Dell, Ph.D. (Cornell Tech), Madeline Sterling, M.D. M.P.H. (Weill Cornell Medicine)
- Performed qualitative analysis of interviews with 50+ aides, nurses, physicians, social workers and agency leaders to understand the technology ecosystem around the home care of heart failure **[5,7]**.
- Synthesized resulting themes into a functional prototype of a tablet-based tool for communication, data collection and decision support for HHAs in the field. Used the prototype in a participatory design study with HHAs, nurses, and other stakeholders to elicit ideas on how aides might be better empowered within home care work **[4]**.
- Interviewed 20+ aides working in New York City during COVID-19 to elucidate how the pandemic affected their experiences **[3]**.

Past Research

Extracting family history from unstructured clinical notes
- Developed a combined rule-based and statistical model (LSTM-CRF) extracting family history information from unstructured text in patient information questionnaires.
- Awarded student travel grant to present at the OHNLP/BioCreativ workshop at ACM-BCB 2018.

Evaluating the usability of a personal data filtering interface
PI: Deborah Estrin, Ph.D. (Cornell Tech)
- Conducted a controlled experiment via Amazon Mechanical Turk HITs evaluating the usability of an interface for filtering sensitive data from a user's Google Takeout export, with the goal of providing sanitized personal data to researchers.
- Performed semi-structured interviews to reveal usability and privacy issues around the tool.

Prototyping a tool for real-time smartphone-based mood tracking
PI: JP Pollak, Ph.D. (Cornell Tech)
- Prototyped and tested an intentive computing tool for logging emotional states in real time.
- Performed observational studies and semi-structured interviews to investigate the usability and utility of the tool for managing subthreshold and generalized anxiety.

Modeling the dynamics of enterovirus-71 in Taiwan: An application of the TSIR model
PI: Bryan Grenfell, Ph.D. (Princeton University)
- Developed a time-series model predicting the impact of vaccination on enterovirus infection rates in Taiwan based on data from the Taiwanese CDC. [poster]
- Awarded departmental prize for excellence in mathematical modeling.

Teaching and Mentoring Experience

Cornell Tech, New York, NY

Research Internship Supervisor, Cornell Tech Summer Intern Program — Summer 2020
Teaching Assistant, INFO 6940: Technology & Social Justice, Professor Nicola Dell — Spring 2020
Teaching Assistant, INFO 6410 / CS 5682: HCI & Design, Professor Nicola Dell — Fall 2019
Research Internship Supervisor, Technion + Cornell Tech Intern Program — Fall 2019
Grader, CS 5740: Natural Language Processing, Professor Yoav Artzi — Spring 2019
Lead Teaching Assistant, Product Studio, Professor Deborah Estrin — Fall 2018

Weill Cornell Medical College, New York, NY

Guest Lecturer, HCPL 8101: Digital Health, Professor Deborah Estrin — Summer 2020
Tech for Caregivers: Changing care by centering home health aides through technology [slides]

Fullstack Academy, New York, NY

Software Engineering Teaching Fellow — Summer 2017

- Taught and mentored 80+ students at a selective software engineering bootcamp.
- Delivered 10-minute talk on inclusive design and web accessibility: https://youtu.be/NQP8yg81KZ8

Relevant Work Experience

Freelance Software Designer & Developer, New York, NY — 2017 - present

- Designed and developed a recipe management tool for the Thomas Keller Restaurant Group.
- Developed a Chrome extension providing online news readers with articles from contrasting political viewpoints for civic media startup Bridge the Media.

Pfizer, Inc., New York, NY

Summer Associate — Summer 2018

- Led a team of UX researchers and technologists to synthesize user stories, product requirements and storyboards for a care navigation product addressing health disparities within the Welsh NHS.
- Interviewed domain experts on the feasibility of a consumer voice product for patient support.

Biomeme, Inc., Philadelphia, PA

Product & Business Development Associate — 2014 - 2016

- Developed an at-home sexual health diagnostic for a national reproductive healthcare provider.
- Developed a point-of-care influenza diagnostic with a federal disease control agency, resulting in a pilot program in a clinic network in Nairobi, Kenya.
- Conducted UX studies to guide development of a consumer-facing tool for personal DNA analysis.

Oxford University Clinical Research Unit (OUCRU), Ho Chi Minh City, Vietnam

Research Intern — Summer 2013

- Conducted literature reviews, performed data analyses (R) and mapped patient enrollment (GIS, Illustrator) for ongoing clinical studies at a tertiary tuberculosis hospital.
- Funded by the Center for Health & Wellbeing at Princeton University.

Doctors Without Borders / Medecins Sans Frontieres (MSF), New York, NY
Editorial & Multimedia Intern Summer 2011, 2012
- Produced audio, video & web features on MSF field staff at humanitarian aid sites worldwide.

The Daily Princetonian, Princeton, NJ
Managing Editor 2013 - 2014
- Led 100+ staff of a collegiate news organization publishing in print 5x/week and online 24/7.
- Built web and data journalism departments, and expanded the paper's multimedia capabilities.

Additional Leadership and Service

PhDs At Cornell Tech (PACT), *2020 Co-President*
Elected to co-lead the PhD students' association at Cornell Tech. Sets agenda for student initiatives, organizes and presides over PACT meetings, and represents Cornell Tech PhD student interests to the school administration and broader University assemblies.

Information Science Graduate Students' Association (ISGSA), *2020-21 Cornell Tech Liaison*
Represents the interests of Cornell Tech-based students to the broader Information Science community.

HealthTech.NYC, *2018-19 Co-Organizer*
Curated a speaker series for engineers, designers, and clinicians in the NYC health tech ecosystem.

Venture for America, *2014 Fellow*
Elected to the 2016-17 Alumni Board to support programs widening access to entrepreneurship.

Skills

- **Human-Centered Design** | Interviewing, contextual enquiry, survey design, thematic analysis, prototyping (Sketch, Photoshop, Illustrator, InDesign, InVision)
- **Data Science** | Quantitative analysis and statistical modeling (Python, R, MATLAB), modern machine learning (scikit-learn, Dynet, Tensorflow, Pytorch)
- **Software Development** | Full-stack software engineering (JavaScript, Node.JS, React, HTML, CSS/Sass), Agile development, cloud deployment tools (AWS, Heroku)
- **Communication** | Writing, editing, public speaking, multimedia production (audio and video)
- **Research** | Literature review, study protocol design, IRB submission, paper-writing