Emily Tseng

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Research Interests

I study how digital technology facilitates harms for vulnerable people, with a focus on enabling safe and consentful research with these communities. My research builds on techniques in *human-computer interaction* and *computational social science* to design, build, and deploy novel sociotechnical systems in real-world contexts, with the goal of improving digital security and privacy for vulnerable and marginalized people.

Education

2019-now **Ph.D. at Cornell University,** *Department of Information Science*
Advised by Nicola Dell and Deborah Estrin.

2017-19 **M.S. at Cornell Tech,** *Information Science - Health Tech*   GPA: 3.9/4.0
Relevant coursework: Applied Machine Learning, Deep Learning, Natural Language Processing, Human-Computer Interaction, Interactive Device Design.
Advised by Nicola Dell and Deborah Estrin.

2010-14 **B.A. at Princeton University,** *Ecology & Evolutionary Biology*   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.

Awards & Honors

2021   Microsoft Research PhD Fellowship
2021   Digital Life Initiative Doctoral Fellowship
2020   Best Paper Award, ACM CSCW
2020   Distinguished Paper Award, USENIX Security Symposium
2020   Internet Defense Prize (third place), USENIX Security Symposium
2020   CRA-WP Grad Cohort for Women *(postponed due to COVID-19, attended in 2021)*
2019   Best Paper Honorable Mention, ACM CSCW
2019   Advocate of New York City Award, Mayor's Office to End Domestic & Gender-Based Violence
2019   Cornell University Information Science Department Fellowship
         First-year fellowship awarded for exceptional preparation & promise (top 1.5% of applicants).
2017   Cornell Tech merit scholarship for Master's-level study
2014   Top Senior Thesis in Mathematical Modeling, Princeton University Department of Ecology & Evolutionary Biology
2014   Society of Sigma Xi (scientific research honor society), Princeton University

Refereed Conference and Journal Publications

1. **Tseng, E.,** Sabet, M., Bellini, R., Sodhi, H., Ristenpart, T., and Dell, N. 2022. *Care Infrastructures for Digital Privacy and Security in Intimate Partner Violence.* Conditionally accepted at CHI 2022 (acceptance rate 12.5%).

2. **Tseng, E.,** Freed, D., Engel, K., Ristenpart, T., and Dell, N. 2021. *A Digital Safety Dilemma: Analysis of Computer-Mediated Computer Security Interventions for Intimate Partner Violence During COVID-19.* In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21). Association for Computing Machinery, New York, NY, USA. pdf. online. video.

3. 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. pdf.
Best Paper Award.

4. **Tseng, E.,** Bellini, R., McDonald, N., Danos, M., Greenstadt, R., McCoy, D., Dell, N. and Ristenpart, T. 2020. *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 prize.

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

6. **Tseng, E.,** Okeke, F., Sterling, M., and Dell, N. 2020. *"We can learn. Why not?": Designing Technologies to Engender Equity for Home Health Aides.* In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20). Association for Computing Machinery, New York, NY, USA. pdf. online.

7. 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. 2020. *Understanding the Workflow of Home Healthcare for Patients with Heart Failure: Challenges and Opportunities.* Journal of General Internal Medicine. pdf. online.

8. Freed, D.*, Havron, S.*, **Tseng, E.,** Gallardo A., Chatterjee, R., Ristenpart, T., and Dell, N.. 2019. *"Is my phone hacked?" Analyzing Clinical Computer Security Interventions with Survivors of Intimate Partner Violence.* Proceedings of the ACM on Human-Computer Interaction: Vol. 3, Issue CSCW, Article 202. pdf. online.
Best Paper Honorable Mention.

9. Okeke, F., **Tseng, E.,** Piantella, B., Brown, M., Kaur, H., Sterling, M., and Dell, N. 2019. *Technology, Home Health Care, and Heart Failure: A Qualitative Analysis with Multiple Stakeholders.* ACM SIGCAS Conference on Computing & Sustainable Societies (COMPASS 2019). pdf. online.

Teaching and Advising

Cornell University, remote due to COVID-19

Teaching Assistant, Summer School on Designing Technology for Social Impact	Summer 2021
Teaching Assistant, CS 1340 / INFO 1260: Choices and Consequences in Computing, Professors Jon Kleinberg and Karen Levy	Spring 2021
Teaching Assistant, CS 5682 / INFO 6410: HCI & Design, Professor Nicola Dell	Fall 2020

Cornell Tech, New York, NY

Teaching Assistant, INFO 6940: Technology & Social Justice, Professor Nicola Dell	Spring 2020
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

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 [video]

Presentations

Invited Talks

2021, Digital Life Initiative, Cornell Tech
2021, MIT Visualization Group
2020, United Hospital Fund/Greater New York Hospital Association Annual Symposium
2020, MIT CSAIL Security Seminar
2020, Facebook Research
2020, Precision Behavioral Health Initiative, Cornell Tech
2020, Weill Cornell Medical College

Conference Talks

2021, A Digital Safety Dilemma, ACM CHI [video]
2020, The Tools and Tactics of Intimate Partner Violence, USENIX Security Symposium [video]
2020, Designing for Equity for Home Health Aides, ACM CHI (canceled due to COVID-19)

Academic and University Service

2021, Diversity, Equity and Inclusion Strategic Committee at Cornell Tech, PhD Representative
2021, CHI, Student Volunteer (fully remote conference)
2021, Faculty Hiring Committee at Cornell Tech, PhD Representative
2020, PhDs at Cornell Tech, Co-President
2019, HealthTech.NYC speaker series, Organizer

Workshop Organizer
2021, CSCW. Subtle CSCW Traits: Tensions Around Identity Formation and Online Activism in the Asian Diaspora. [proposal]

Reviewer
ACM Human Factors in Computing Systems (CHI)
ACM Computer Supported Cooperative Work and Social Computing (CSCW)
USENIX Symposium on Usable Privacy and Security (SOUPS)
HEALTHI Workshop on Healthy Interfaces, co-located with ACM Intelligent User Interfaces (IUI)

Current Research

Understanding working alliance in online psychotherapy
PIs: Tanzeem Choudhury, Ph.D., Cristian Danescu-Niculescu-Mizil, Ph.D., Deborah Estrin, Ph.D. (Cornell Tech)
- Investigating how working alliance progresses in 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.
- Analyzed how these forums manifest specific tactics and narrative justifications for abuse **[5,6]**.

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. **[1,4,10]**

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 **[9,11]**.
- Synthesized results into a functional prototype used in a participatory design study with aides, nurses, and other stakeholders to elicit how aides might use technology to achieve equity goals **[8]**.
- Interviewed 20+ aides working in New York City during pandemic lockdowns in spring 2020 to understand how COVID-19 has affected their experiences **[7]**.

Past Research

Extracting family history from unstructured clinical notes
- Developed a 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 Mechanical Turk experiment evaluating the usability of an interface for filtering sensitive data from a user's Google Takeout export.

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 of the impact of vaccination on EV-71 infection rates in Taiwan.
- Awarded departmental prize for excellence in mathematical modeling [poster].

Relevant Industry Experience

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, through the Gates Foundation's Global Health Grand Challenge.

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.

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), Git

- **Communication** | Writing, editing, public speaking, multimedia production (audio and video)