

# Emily Tseng

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## Research Interests

I design and build computational tools to enable new systems of caregiving, with a focus on augmenting the capabilities of frontline caregivers. Using methods from *human-computer interaction*, *machine learning* and *computer security and privacy*, I design, build, deploy and evaluate novel computing systems in real-world contexts, with the goal of widening access to care 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.

## Awards & Honors

- 2020      Best Paper Award, ACM CSCW
- 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

## Publications

1. **Tseng, E.**, Freed, D., Engel, K., Ristenpart, T., and Dell, N. *A Digital Safety Dilemma: Analysis of Computer-Mediated Computer Security Interventions for Intimate Partner Violence During COVID-19*. ACM Conference on Human Factors in Computing Systems (CHI 2021, to appear). [preprint](#).
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. [pdf](#).  
**Best Paper Award.**
3. **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.**
4. 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 Medicine. Published online August 04, 2020. [pdf](#). [online](#).
5. **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 2020). [pdf](#). [online](#).
6. 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](#).
7. 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.**
8. 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](#).

## 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 the use of generative modeling techniques to understand how working alliance manifests, develops, and dissipates 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.
- Analyzed how these forums manifest specific tactics and narrative justifications for abuse [1,2].

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. [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 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 [4].
- Interviewed 20+ aides working in New York City during pandemic lockdowns in spring 2020 to understand how COVID-19 has affected their experiences [3].

## 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.

Prototyping a tool for real-time smartphone-based mood tracking

*PI: JP Pollak, Ph.D. (Cornell Tech)*

- Prototyped and tested an intensive computing tool for logging emotional states in real time.
- Used interviews and observational studies to examine its usability and utility in managing generalized and subthreshold 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 of the impact of vaccination on EV-71 infection rates in Taiwan.
- Awarded departmental prize for excellence in mathematical modeling [poster].

## Teaching

**Cornell University**, remote due to COVID-19

Teaching Assistant, INFO 1260 / CS 1340: Choices and Consequences in Computing, Spring 2021  
Professors Jon Kleinberg and Karen Levy

Teaching Assistant, INFO 6410 / CS 5682: HCI & Design, Professor Nicola Dell Fall 2019, 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

Introduction to Human-Centered Design

Tech for Caregivers: Changing care by centering home health aides in 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>

## Talks

*The Tools and Tactics of Intimate Partner Surveillance* 2020

- MIT CSAIL Security Seminar
- Facebook Research
- 29th USENIX Security Symposium

*Technology in Frontline Caregiving* 2020

- Precision Behavioral Health Initiative, Cornell Tech
- Weill Cornell Medical College
- CHI '20 (canceled due to COVID-19)

*Experiences of Home Health Aides in New York City during COVID-19* 2020

- United Hospital Fund/Greater New York Hospital Association Annual Symposium

## 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.

## 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 and represents 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 design, IRB submission, paper-writing