1. Overview

I believe STEM students should develop as critical thinkers and empathetic leaders. To this end, I aim to equip students with not only fundamental and practical knowledge of computing and data science, but also the grit to keep learning across a lifetime of rapid technological evolution—and the empathy to center positive social impact in their work and conduct. I have been the beneficiary of such training, having received a top-flight interdisciplinary education at Princeton University and Cornell Information Science, and I am eager to continue shaping STEM education in this direction.

First, I anchor in **project-based learning**. Each student brings their own unique perspective and passions; allowing them to work on those passions is the best possible intrinsic motivation for technical skill development. In parallel, I emphasize **collaboration**—with each other, and with me as an instructor. Group projects provide not only vital professional skills leading teams, organizing projects, and communicating through conflict, but also spaces for students to learn from each other. Simultaneously, I believe the student-teacher dynamic is one of support and facilitation. My role as an educator is to foster an inclusive and accessible learning environment, and provide structure for fair evaluation, not punishment. Lastly, I center **self-reflection, criticality, and discussion**. Students are best equipped to consider the societal and ethical impacts of technology if they start from a basis of self-knowledge: what their own biases are, and how they manifest in their work. From this basis, we can create classrooms where mistakes are opportunities for growth; where differences of opinion are met with curiosity and empathy; and where we are all invested in each others' success.

2. Teaching Experience

I have been a teaching assistant at Cornell for an undergraduate course on **ethics in computing**, and graduate-level courses on **human-computer interaction (HCI) and design** and **data science and machine learning (ML).** I have further taught design to medical students at Weill Cornell Medical College, and web development at a software engineering bootcamp. I have taught in small and large classrooms, across in-person, remote, and hybrid modalities. My most formative teaching experiences have been:

Data science and machine learning (ML). At Cornell Tech, I was invited to TA for Prof. Fei Wang's Master's-level course on applications of ML in healthcare (INFO 5375, ~35 students). I designed the assignments and grading criteria for presentations, project proposals, and lab reports. I also developed the class's debates, on topics like model interpretability and the use of large language models (LLMs) in clinical care. This experience taught me to structure data science coursework to balance practical techniques, intellectual rigor, and ethical consideration. Kaggle-style competitions are necessary to expose students to ML's benchmark-beating culture, and to build professional portfolios. But it's also important for students to write well-referenced project proposals motivating the task (e.g., *why* do we believe we can predict depression from social media posts?). Importantly, I believe in emphasizing the challenges of collecting usable data and modeling a realistic approach with domain experts, to resist "solving" a spurious task with the largest neural net possible. Our debates were key to encouraging this type of critical reflection, but required me to structure discursive learning for students across technical and non-technical backgrounds. To create a level playing field, I created a suite of resources to appeal to learners of all styles: a document with guidelines for debates (with annotated links to further reading), a presentation on the debate format with roleplayed examples, and extra 1:1 meeting slots for students who wanted to rehearse.

Human-computer interaction (HCI) and design. Also at Cornell Tech, I served as a teaching assistant (TA) for a Master's-level course on designing and evaluating user interfaces (INFO 6410 / CS 5682, ~200 students). I held weekly office hours, ran labs, updated problem sets, and supervised a team of Master's-level graders. I learned how to blend HCI's theoretical foundations with industry-ready technical skills. HCI spans algorithms and systems for user interfaces; applied social science; and practical techniques for digital prototyping. As a design discipline, the field can also feel unapproachable to students who have not been encouraged to think of themselves as creative. I thus structured my office hours and labs to not only provide 1:1 support for students new to design tools, but also make the material approachable by drawing on students' own experiences. For example, to teach prototyping, I demonstrated how to create a user flow in Figma, while explaining why design tools evolved for collaboration. Instead of naming-and-shaming bad designs, I pushed students to analyze which cases a given design worked for, and which it excluded. By emphasizing critical discussion alongside technical skill, I made space for students from varying levels of prior expertise to contribute to the classroom, and encouraged students to think of HCI and design as the sites of exciting and impactful scholarly debates.

Cross-disciplinary approaches to ethics in computing. I was invited to TA for Prof. Karen Levy and Prof. Jon Kleinberg's undergrad course on ethics in computing (CS 1340 / INFO 1260, ~500 students), which blends computational, legal, and social scientific approaches to understanding the impact of computing systems. My responsibilities included coordinating a large team of undergrad TAs to grade homeworks, and holding weekly office hours. I came away equipped to make ethics in computing approachable to students from different cultural and disciplinary backgrounds. Problem sets included both

technical content (e.g., statistical analyses of the identifiability of municipal records) and written essays (e.g., analyses of worker vs. management perspectives on productivity software). I became well-practiced at improvising toy examples of concepts like Bayes' Rule, and also coaching students in analytical writing. I also became very familiar with how to ground ethics in students' experiences. Many students came to office hours reflecting on how to actualize ethics in an industry-dominated landscape of computing careers; I learned to connect their interests and fears to course material, as a way to make analytic tools approachable.

3. Teaching Excellence

My most formative teaching experiences have been as a graduate teaching assistant (GTA) at Cornell University, where GTAs do not receive formal reviews or course evaluations from students. Anecdotally and qualitatively, I have received positive feedback, both from students I teach and from students I supervise as course graders (below). For my efforts, I was awarded the inaugural **Outstanding Teaching Assistant Award** by the Cornell Tech faculty in the spring of 2023.

From a student for whom I was a GTA in INFO 5375, Machine Learning for Health: "*Emily was technically excellent, often providing important insights for our class materials and projects which guided our team's work. She was also supportive and responsive, often following up with additional materials that we discussed in/out of class to aid our understanding.*"

From a student I supervised as a grader in CS 5682 / INFO 6410, HCI and Design: "*Emily effectively balanced her responsibilities to enrolled students with coordinating a remote team of student graders during a pandemic semester. She was always constructive and prompt in providing feedback. She is patient, clear, and always helpful, and I learned a lot from how she ensured consistency in grading across multiple graders and assignments.*"

4. Workshop Experience

In addition to classroom teaching, I have honed my skills as an educator in a series of conference workshops at ACM CSCW and FAccT. At ACM CSCW 2021, I co-led a hybrid workshop on Asian diaspora positionality in HCI and CSCW (proposal, including reading material, cited in [7]). Convened to respond to that year's surge in anti-Asian violence worldwide, our workshop brought together researchers with Asian diasporic identities and allies to understand how to better account for the Asian diasporic experience in social computing. Through this workshop, I learned how to structure collegial and respectful learning environments around topics that could be emotionally charged; for example, we included an introduction to reflexivity and positionality for those less familiar with these styles of research.

Most formatively, in 2023, I co-led two workshops, at ACM FAccT and ACM CSCW, on community-collaborative approaches to computing (proposal with reading material available at [6]). For each, I designed the workshop curriculum, structure, and timing, including a mix of didactic content and small-group exercises. We began both workshops with a panel discussion and Q&A with senior researchers covering structural barriers to working meaningfully with communities in computing, for which I served as the moderator. To help attendees maintain focus during the didactic portion, I designed a note-taking template that attendees could use to collaboratively or privately document the discussion. From these notes, we synthesized a list of common needs for researchers interested in pursuing community-collaborative research (e.g., common methodological guidelines). Attendees then split into small groups to work together on artifacts responding to these needs (e.g., outlining a conference paper). We received substantial positive feedback from attendees across in-person and hybrid modalities. One said: "*It was so well run, even via Zoom—fun and relaxed, but also informative and productive.*" The living documents we created for each workshop are publicly available, at bit.ly/cca-craft and bit.ly/cca-cscw.

5. Future Courses

I am well-qualified to teach large core courses for undergraduates and Master's students, on topics such as **(1) ethics in computing, (2) HCI and design,** and **(3) human-centered data science and ML.** For (1), I envision an interdisciplinary course on ethics in technology, across algorithms, HCI, philosophy, science and technology studies (STS), and law. For (2), I envision teaching fundamentals and frontiers in HCI (e.g., interface design and evaluation, CSCW, human-AI collaboration) via modern techniques for iterative human-centered prototyping. For (3), I imagine a project-based course where students learn fundamental and state-of-the-art techniques in data collection and cleaning, as well as model development, evaluation, and deployment. I am particularly excited to teach data science's history in activism, via texts like Tufte and duBois, as a backdrop to what I believe are two upcoming sea changes in the field: a shift from mining datasets to building human-data interactions, and renewed focus on sustainability in place of scale (e.g., mobile and edge computing, low-resource NLP).

I am also excited to develop special topics seminars for upper-level students. One such course will cover **(4) privacy and security for at-risk populations.** This course will discuss recent research on the digital-safety needs of people at heightened risk of harm, and how computer security and privacy has evolved in response. It will teach how to safely conduct research with these groups, and how to audit technologies' robustness to these harms. I also want to teach a course on **(5) applied ML for health.** Advancements in ML are pushing the frontiers of healthcare and health research, requiring new approaches to ethical safeguards. This course will spotlight ML's application to domains like clinical risk scoring, mental

health, and drug development, alongside analytical tools in bioethics that can help students reason about ML's impact on human dignity, privacy, and autonomy. Finally, I would like to teach **(6) social justice and HCI.** This course will use recent literature in justice-oriented design (e.g., [1–5,8]) to revisit HCI's fundamentals and frontiers, especially as they relate to human-centered data science and human-data interaction. Students will design data-driven technologies to address inequities in their communities, and critically examine how technologists contribute to social change.

6. Mentoring Experience

Strong mentorship has been vital to my career as a woman of color in computing. I take seriously my responsibility to be that support for others, as a leader in my research collaborations, my institution, and my field.

Science as a team sport. In my Ph.D., I have led multiple collaborative projects involving junior students working alongside senior postdocs and faculty. These experiences have cultivated an ethos of science as teamwork that will translate to success as a faculty advisor. My mentees have gone on to thriving careers, including as HCI researchers themselves. One student, who worked with me in a Master's before going on to a doctorate, said: "*Due to Emily's mentorship, I had the skill set and confidence to shepherd two first-authored papers to completion during the first year of my PhD.*"

As a research leader, I treat junior students like teammates. I invest in their development both holistically and practically, by pointing them to new areas of the literature, teaching them new skills, and cluing them into the hidden curricula of academia. I empower students to lead parts of our project, and commit to consistent communication channels where I prioritize their questions, however big or small, and build their confidence. I emphasize professional skills like how to organize a meeting, how to manage up, and how to deliver research findings to stakeholders with competing interests. I also make sure mentees receive credit: I close every project with a team-wide thank-you note describing what each teammate brought to the work. One student wrote in an evaluation: *"Emily is a meticulous planner and clear communicator who drives strong team momentum and alignment. She is also an empowering mentor who is enthusiastic about sharing her knowledge, letting junior researchers like myself take on responsibilities that could push their limits, and giving guidance when needed."*

Formal and informal mentorship in the department and the field. As a student who has benefited from elite education, I work to pay forward my relative privilege as a friendly and low-pressure advisor within the broader HCI community. I regularly provide feedback on proposals, papers, presentations, and research statements to my colleagues. I have also led workshops at venues like ACM CSCW and FAccT, where junior researchers can connect with peers and senior colleagues.

I have additionally been a leader in creating department-level pathways for peer-to-peer support. In my fourth year, I volunteered to lead the department's student-to-student 1:1 mentoring program. I matched mentors with mentees; liaised with the department to secure and distribute funding to mentors; and assisted my colleagues with being good mentors via documentation, regular reminders, and on-call support. I also made sure to create documentation for the program, now in use by future students, to ensure the program's sustainability. This experience taught me how to design and execute mentorship programs within an institution—skills I will use to build similar sustainable support structures as a professor.

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