

## Angela Stewart

Postdoctoral Scholar, Carnegie Mellon University



**Title:** Beyond Team Makeup: Diversity in Teams Predicts Valued Outcomes in Computer-Mediated Collaborations

**Abstract:** In our modern world, we must engage in computer-mediated collaborative problem solving (CPS) with diverse teams. However, teams routinely fail to live up to expectations, showcasing the need for technologies that help develop effective collaboration skills. This talk will discuss work taking a step in this direction, by investigating how different dimensions of team diversity (demographic, personality, attitudes towards teamwork, prior domain experience) predict objective (e.g. effective solutions) and subjective (e.g. positive perceptions) collaborative outcomes. We collected data from 96 triads who engaged in a 30-minute CPS task via videoconferencing. We found that demographic diversity and differing attitudes towards teamwork predicted impressions of positive engagement, while personality diversity predicted learning outcomes. Importantly, these relationships were maintained after accounting for team makeup. None of the diversity measures predicted task performance. We discuss how our findings can be incorporated into technologies that aim to help diverse teams develop CPS skills.

**Bio:** Angela is a new postdoc in the HCI Institute at Carnegie Mellon, working with Dr. Amy Ogan. She graduated from the Social, Emotional, and Cognitive Computing Lab at the University of Colorado Boulder, under the direction of Dr. Sidney D'Mello. Angela has long been fascinated by how technology and education intersect, to make more equitable, inclusive spaces. She is excited to share her work with you all, and be part of the CMU HCI community! [angelaebstewart.com](http://angelaebstewart.com)

**Host:** Amy Ogan

## Yongsung Kim

Postdoctoral Fellow, CMU HCII



**Title:** Designing Flexible Coordination Systems to Advance Individual and Collective Goals in Physical Crowdsourcing

**Abstract:** Volunteer-based physical crowdsourcing systems connect individuals to make unique contributions to solve local and communal problems and enable new services. A key challenge in enabling such systems is attracting enough willing volunteers who can make useful contributions to achieve desired system goals. While most volunteer-based systems provide volunteers flexibility to attract more volunteers to make convenient contributions, it can be challenging to reach desired system goals with uncoordinated contributions. In contrast, other systems may direct volunteers to specific tasks to meet the desired system goals, but may fail to attract enough volunteers because they do not provide much-needed flexibility.

In this talk, I introduce the idea of flexible coordination that combines the benefits of both approaches in providing flexibility and coordinating useful contributions. A flexible coordination system surfaces opportunities for volunteers to contribute that are within volunteers' routines and that are useful for achieving system goals. To enable this idea, I introduce Hit-or-Wait, a decision-theoretic framework that surfaces opportunities for volunteers to make convenient and coordinated contributions on-the-fly to improve the quality of service. Through simulations and a field study in the context of community-based lost-and-found, I demonstrate that using Hit-or-Wait enables a system to make efficient use of people's contributions with minimal disruptions to their routines without the need for explicit coordination. I will also discuss how we may extend the idea of flexible coordination to distributed sensemaking.

**Bio:** Yongsung Kim is a postdoctoral fellow in the HCII at CMU. He is finishing his PhD in Technology and Social Behavior at Northwestern. His research advances the design of intelligent systems that transform how people and their communities advance their individual and collective goals. Specifically, his research designs flexible coordination systems that do not enforce rigid ways of working and collaborating but that instead surface ways to advance goals of interest as opportunities arise. His work has been published in conferences such as CHI, UIST, CSCW, and WWW. Please read more from his website at [www.yongsungkim.com](http://www.yongsungkim.com)

**Host:** Niki Kittur

## Alex Ahmed

Post Doctoral Fellow, Carnegie Mellon University, HCI



**Title:** Community-based design of open source software for transgender people

**Abstract:** From the surveillance of undocumented people to the algorithmic management and exploitation of gig economy workers, people are increasingly alienated from how technologies are designed and how they impact our lives. These systematic denials of agency predominantly target Black, Brown, working-class, and LGBTQ people. In this talk, I review the social and political contexts surrounding gender self-determination, which existing interactive systems often fail to support or actively deny. I then describe a community-based, human-centered design project to build open source software with and for transgender people. By centering the needs, experiences, and expertise of our community members, we created a customizable voice training app that prioritizes playfulness, affirmation, and care. My work has important implications for how computer science researchers can challenge harmful power dynamics in technology design and implementation through equitable, community-engaged partnerships.

**Bio:** Alex A. Ahmed is a postdoc at Carnegie Mellon's Human Computer Interaction Institute, advised by Sarah Fox and Ken Holstein. Guided by feminist and queer theory, her work involves a combination of qualitative and quantitative methods, community-based design, and open source software frameworks. Her research has been supported by the NSF Graduate Research Fellowship, the NIH Ruth L. Kirschstein National Research Service Award, and the CRA/NIH Computing Innovation Fellowship. In her spare time, she sings in an a capella group called the Kinsey Scales, plays guitar and board games, and obsesses about Star Trek. **Website:** [www.alexahmed.com](http://www.alexahmed.com)

**Host:** Sarah Fox & Ken Holstein

## Sarah Preum

Post-Doctoral Fellow, HCII, CMU



**Title:** Conflict Detection for Increasing User Safety

**Abstract:** We are increasingly interacting with pervasive applications from a wide variety of domains, including smart health, intelligent assistants, and smart cities. However, tremendous challenges remain about understanding the effects of such interactions and ensuring the safety of pervasive systems. In this talk, I will demonstrate how deep semantic inference of the multimodal data generated from interactive, pervasive systems can improve health safety. I tackle the challenge of detecting conflicting information and interventions originating from various information sources and health applications, respectively. 72% of adults in the USA report receiving conflicting information on just nutrition, while over 51% of chronic disease patients receive conflicting information on medications. Adhering to conflicting health information impedes treatment adherence. Eventually, it leads to an increased cost of healthcare or adverse health outcome. I will present novel textual inference, time-series prediction, and information fusion techniques to (i) detect and predict conflicts and (ii) deliver safe, interpretable, and personalized health interventions. Throughout the talk, I will demonstrate how I address the challenges of low training data, knowledge integration, and interpretability for safety-critical, pervasive health applications. I will also cover how this solution can be generalized for other human-in-the-loop applications beyond smart health.

**Bio:** Sarah Preum is a postdoctoral fellow at Carnegie Mellon University's Human-Computer Interaction Institute. She will be joining the CS department at Dartmouth College as a tenure-track assistant professor in July 2021. At CMU, she works with Professor John Zimmerman to provide data-driven clinical decision support using AI in the Intensive Care Unit. Sarah develops data-driven, knowledge-integrated information extraction, and fusion systems to increasing human-centric systems' safety and effectiveness. She is interested in neuro-symbolic deep inference models and knowledge discovery methods to enable more capable and intelligent human-centric systems. She has developed novel natural language processing, knowledge integration, and temporal modeling techniques to provide personalized decision support for health safety. Sarah has received her Ph.D. in CS from the University of Virginia. Sarah is a recipient of the UVA Graduate Commonwealth Fellowship, the Adobe Research Graduate Scholarship, the NSF Smart and Connected Health Student Award, and the UVA Big Data Fellowship. Her work has been published in premier CS conference proceedings and journals, including ICDE, CIKM, PerCom, IPSN, ACM CSUR, and IEEE Trans. of CPS. More information about Sarah and her work can be found on her website: <http://www.cs.virginia.edu/~sp9cx/>

**Host:** John Zimmerman