

TECHNOLOGY FOR SOCIAL CHANGE SERIES

"An Upcycled IoT: Creating Tomorrow's Internet of Things Out of Today's Household Possessions"

Presented by **Kristin Williams, PhD Candidate, Human Computer Interaction Institute, Carnegie Mellon University**



Friday, November 12 | 12:00 p.m.
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Abstract: Imagine if programming cutting-edge technologies was so approachable that anyone could imbue them with their own meanings and ways of life. For example, families use household objects to organize and manage daily life in idiosyncratic ways that resist generalization and differ from family to family. For the Internet of Things (IoT) to accommodate these idiosyncratic arrangements, it will need to be customizable, lightweight, and substantially cheaper (perhaps even <\$0.10). To enable this kind of IoT, my research uses emerging techniques in backscatter communication to create a battery-free and wireless user interface that incorporates existing possessions into an IoT ecosystem through interactive stickers. Instead of replacing everyday objects in favor of internet-enabled equivalents (e.g., a smart bulb for a lightbulb), my work allows existing possessions to be upcycled with IoT: like giving an old, favorite teddy bear a friendly, conversational interface. In this talk, I'll describe how I bring a human computer interaction (HCI) approach to enabling an Upcycled IoT by both studying how households use everyday objects and building lightweight, customizable technology to integrate with these possessions.

Bio: Kristin Williams is a PhD candidate at the Human Computer Interaction Institute in Carnegie Mellon University's School of Computer Science. Her dissertation research focuses on making programming the Internet of Things approachable to families modifying their home with internet services. This work builds on Kristin's longstanding interests in DIY publishing and access to information. In the past, Kristin has worked closely with community organizations to shape and evaluate assistive technologies for individuals with visual and cognitive disabilities, managed an archive of Soviet dissident literature on the political abuse of psychiatry, and created a 10+ year book project on Central Asian civil society as a Peace Corps volunteer in Kazakhstan. She has an MS in Human-Computer Interaction from the University of Maryland, College Park and a BA in Philosophy from Reed College. She was selected for the 2021 Rising Stars in Eecs Workshop, and is the recipient of both the NSF EAPSI Fellowship and the AAUW Career Development Grant.