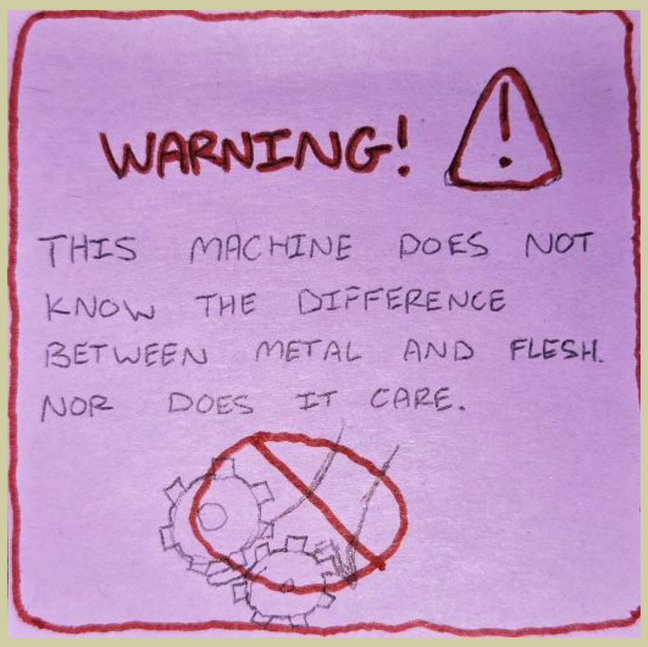
What Are They Worried About?

Initial Insights into Users' Mental Models of Robot Hazards

Robot capabilities can put people at risk.

How can we communicate these hazards in ways that people will understand?



Participant's sketch of a robot hazard label

We propose **design annotations**:
modifications to a robot's design to communicate hazards without altering core functionality.

E.g., graphical labels like on household chemicals,
status indicators like a red "recording light",
verbal warnings from the robot.

But how do we design these annotations?

What form and modalities may they employ?

How can we describe hazards intuitively to users?

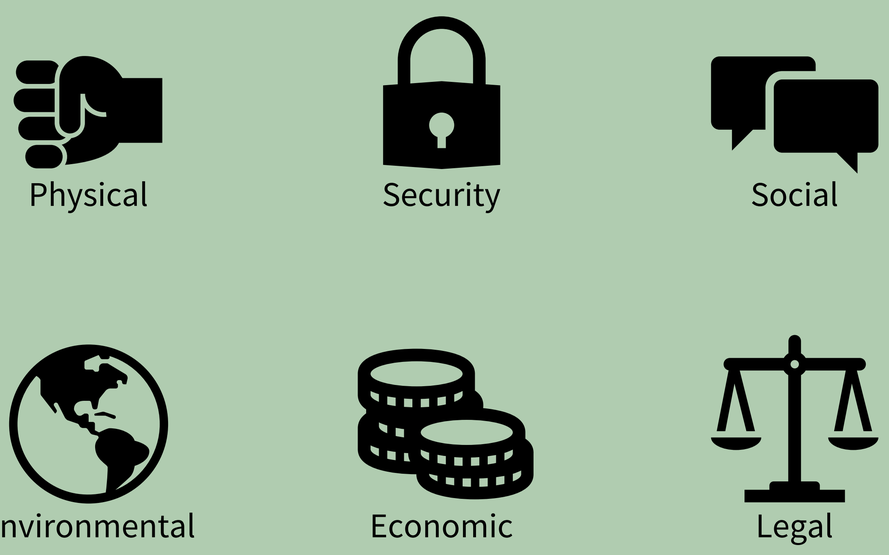
What information should annotations contain?

How can we alert the user without disrupting the interaction?

We ran **design workshops** with potential users to:
1. elicit their mental models of robot hazards, and
2. brainstorm annotation designs for future exploration.



1. How may we frame robot hazards?

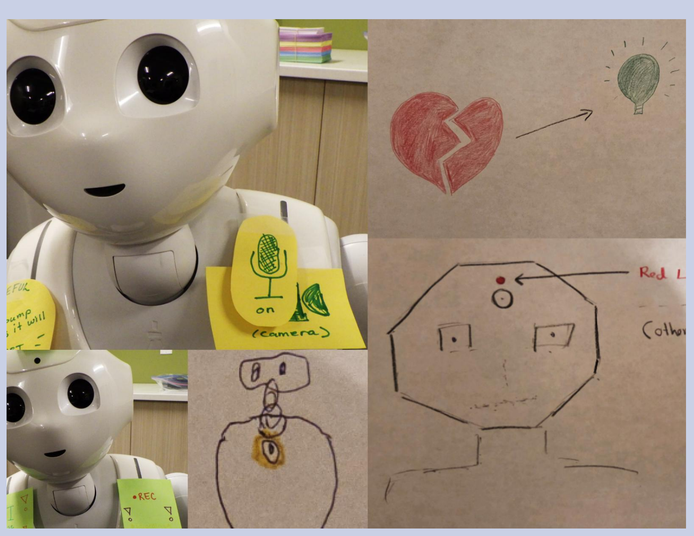


Participant-Proposed Hazard Categories

2. What might annotations look like?

Participant-Designed Examples of Robot Hazard Labels





Participant-Designed Status Indicators and Other Annotations

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