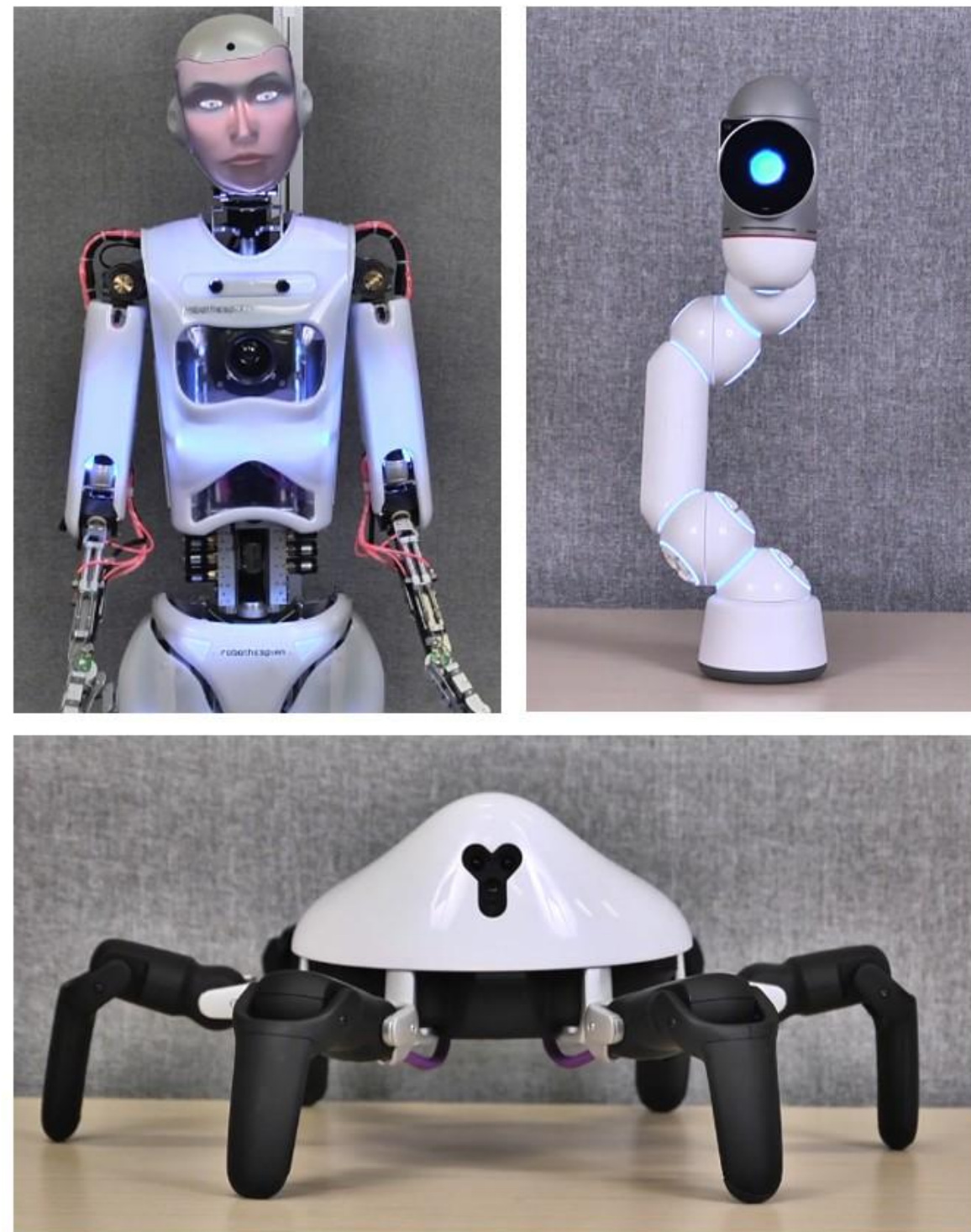


Perceived Moral Patency of Social Robots: Differences Across Morphologies

Moral patency is known as the “extents to which entities are objects of moral concern” (Banks, 2021). This research looks at how humans perceive robots’ moral patency, and compares linguistic indicators of patency across robot morphologies. This is a secondary analysis of data produced in an exploratory study conducted by Banks (2021). In that study, participants were exposed to introductory videos of one of three social robots: mechanical, humanoid, or spider. In all of these conditions, the robot was called “Ray.” Participants were asked to create stories about that robots’ moral patency in terms of 12 moral dimensions (per Moral Foundations Theory; Graham et al., 2013): care/harm, fair/unfair, loyalty/betrayal, authority/subversion, purity/degrade, and liberty/oppression.

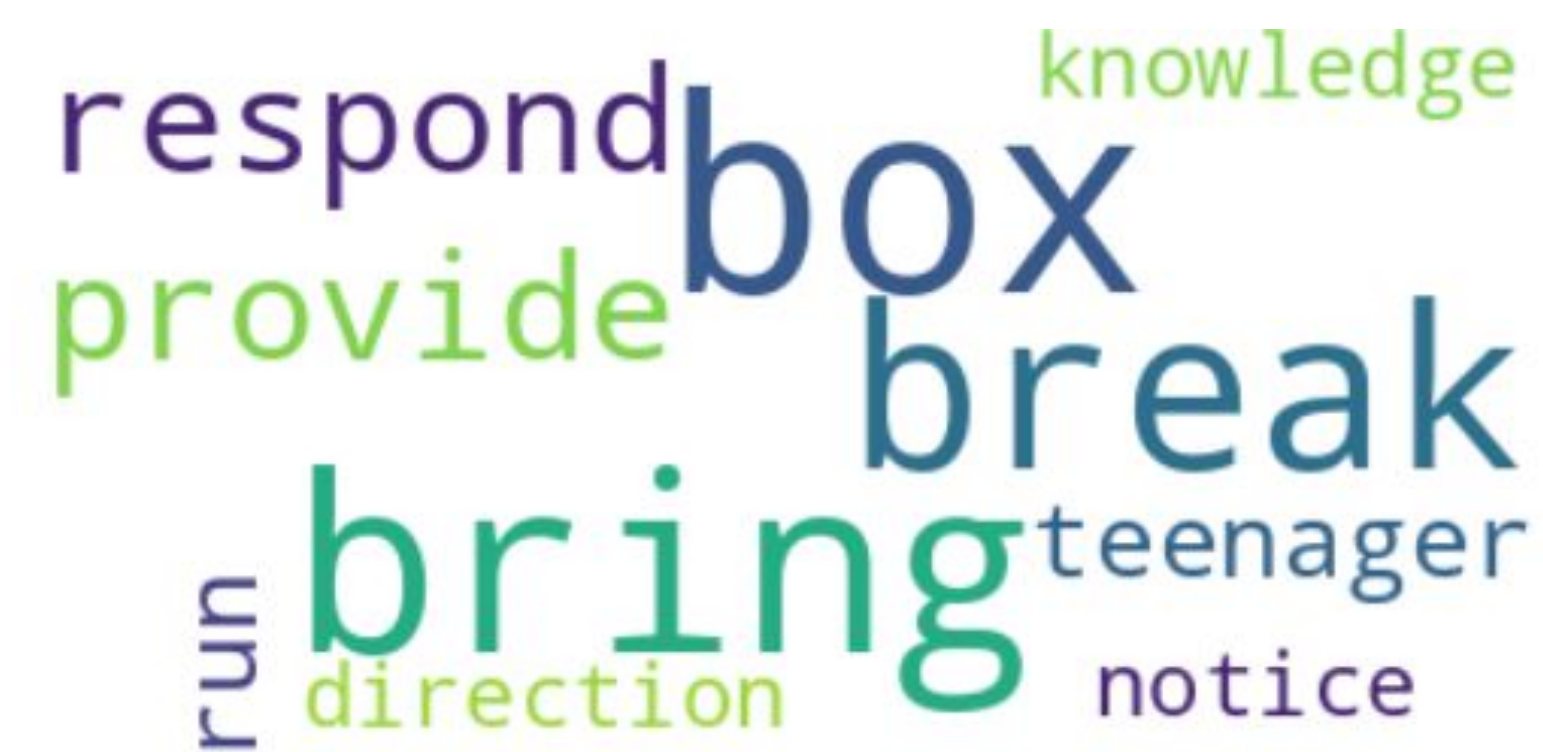
Method



Upper left is the humanoid root; upper right is the mechanical robot; bottom is the spider robot. From Banks (2021).

1. Ran LDA Topic Modeling
2. Found the words with the highest frequency in each condition
3. Created a word cloud for each condition
4. Removed irrelevant words
5. Analyzed context in which most common words were used
6. Looked for overall themes in each condition
7. Interpreted the differences between the three conditions

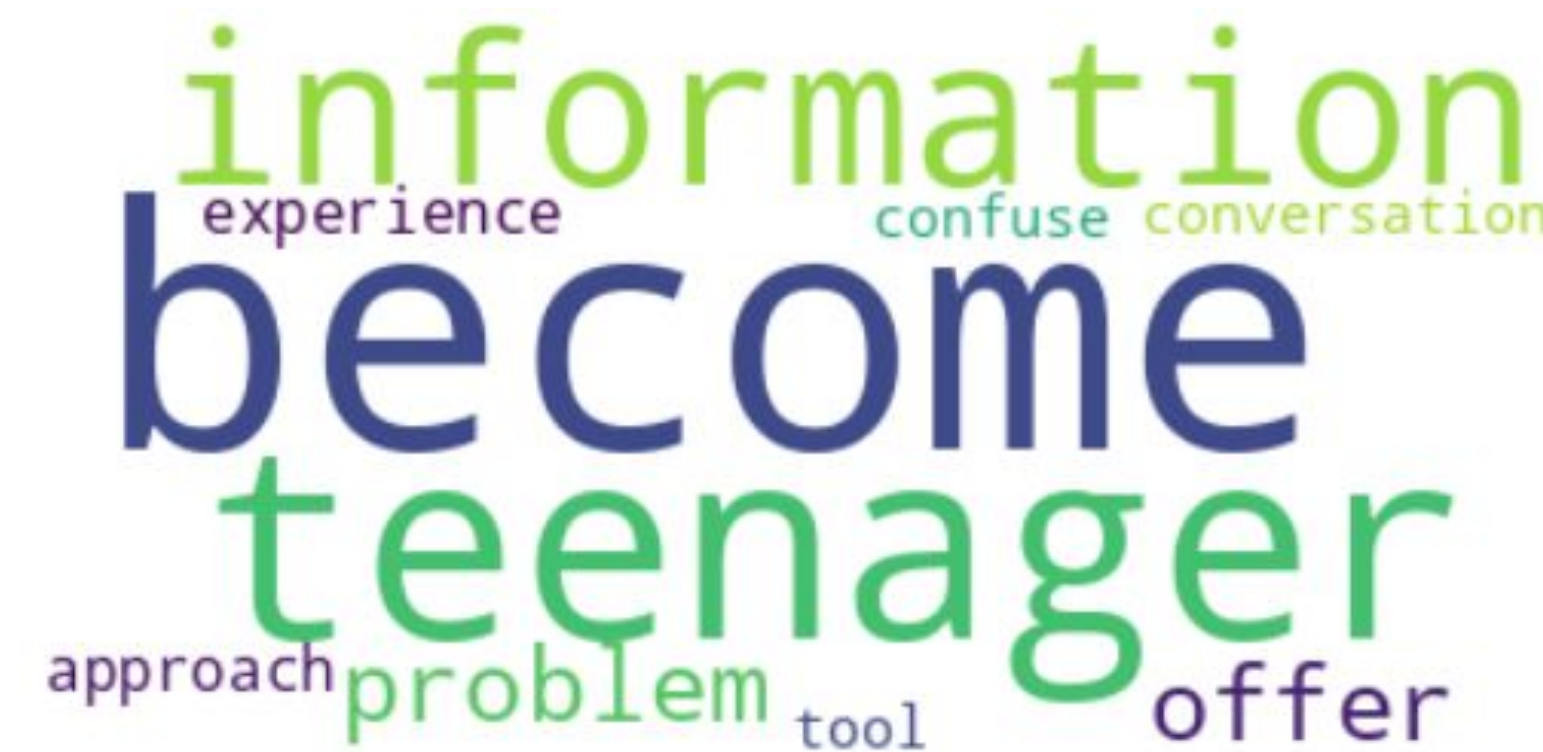
Spider Condition



Interpretations

- Many comments reflected the idea that Ray’s fate depends on whether a human decides to show mercy or maltreat it.
- People seemed to treat it as if it were more defenseless than the other two robot conditions.
- When they described situations in which Ray was harmed, participants most frequently used the word “break,” which is more aggressive than in the other conditions.

Humanoid Condition



Interpretations

- Some comments portrayed Ray as becoming an emotional state or adopting characteristics that are human in their nature.
- When people thought of ways that Ray could be harmed, they thought more of giving him false information rather than physically harming it as they do in the other conditions.
- However, they often portrayed teenagers, whom they often described as immature, hurting Ray physically.

Mechanical Condition



Interpretations

- Many comments reflected heuristics that most humans have about robots, e.g., that they’re going to steal people’s jobs.
- Some showed how people want to ridicule robots by laughing at them, probably to make humans feel superior.
- In stories where Ray is harmed, participants most frequently used the word “knock,” to describe people knocking Ray over.

Conclusion:

- It seems like people prefer specific wording over others when describing how different versions of social robots could be treated immorally.
- The wording that they choose may reveal some of the mental concepts that people have regarding each robot’s morphology.