Mitigating Breakdowns with Cute Behavior

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Wilson

Introduction

- Service robots may become more prominent in upcoming years.
  - Ideal for automatable tasks such as product delivery
- They are already currently being used in hospitality sectors to deliver products to guests in hospitals and hotels.
- Robots may make mistakes while performing a task.
- Robot designers must consider the possibility of robots having issues if they are to be widely adopted.
  - How can we reduce the negative consequences of these service breakdowns?
- Hypothesis: Robot behavioral cuteness can reduce the negative impact of robot breakdowns.

Study Design

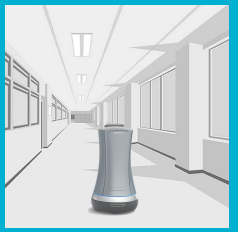
- 2 x 2
  - cute and not cute, breakdown and no breakdown
- Introduce participants to a service robot, Relay, through an introduction video showing it's capabilities.
  - One video will show it's cute behavior, other won't
- Pre-survey captures participant perception of robot.
- A scripted scenario is shown
  - One script will involve a service breakdown, other won't
- Post-survey will feature the same robot perception survey from pre-survey.
  - Also include service evaluation questions

Relay

Relay by Savioke

Script

- 1. Chris orders food to be delivered by Relay.
- 2. Shortly after, Relay starts to deliver food to Chris.
- 3.
  - Robot presents food to Chris.
  - OR Relay arrives, but the door gets stuck. Chris is unable to retrieve the food.
- 4. Chris leaves feedback on display, and Relay soon returns.



Participants

- 18 participants
  - 5 of their surveys discarded due to either correctly guessing the results, not being able to properly read the survey, or being course instructor.
- Randomly assigned to one of four surveys
- 2 out of 13 were female
- Over half were considered themselves knowledgeable in robotics

Pilot Results

- Compared the robot evaluation and service evaluation to determine if cute behavior would have a positive effect compared to no strategy.
- The results indicate that cuteness may be a viable strategy.
  - Service evaluation is slightly better.
  - However, the robot evaluation was lower. This requires more analysis.,

Pilot Results

Non-cute Robot No Breakdown vs Breakdown

Dependent Measure	No Breakdown	Breakdown
Service	4.5	2.5
Satisfaction	4.75	1.5
Willingness to return	4.25	3
Polite	3.5	4.5
Capable	4.25	3.5
Professional	3.75	4
Helpful	4.5	3

Pilot Results

Cute Robot Breakdown vs Not Cute Breakdown

Dependent Measure	Cute	Not Cute
Service	3.5	2.5
Satisfaction	1.7	1.5
Willingness to return	2	3
Polite	4.3	4.5
Capable	2.7	3.5
Professional	3.7	4
Helpful	2.3	3

Reflections

- Pilot study suggests value in a deeper study into this strategy.
- This current method allows for a quick method for testing breakdown strategies.
- Would like to use a scale to measure cuteness. It was hard to tell if the participants found one of the robots to be cuter than the other based on the introduction video.
- Get a more diverse and larger group of participants.
- Future Work
    - Study cute appearance with and without the presence of cute behaviour for breakdown mitigation.