

The Role of Fairness and Value Alignment in Promoting Cooperation with Security Robotic Authority: supplemental document

This document contains the supplementary materials associated with the paper 'The Role of Fairness and Value Alignment in Promoting Cooperation with Security Robotic Authority'.

VIDEOS

Two videos were used to manipulate the interactional fairness conditions: a low-fairness condition (*video1_without_explain.mp4*) and a high-fairness condition (*video2_with_explain.mp4*). Both videos have been uploaded to the repository.

POST-VIDEO VIGNETTES

Four different post-video vignettes were shown to participants after the video, each corresponding to one condition of the 2 (interactional fairness: low vs. high) \times 2 (distributive fairness: low vs. high) design.

1. **Vignette for the low interactional fairness and low distributive fairness condition:** While Tom is still in his car, he notice two other vehicles approaching the gate. Both are noticeably high-end models. Although their drivers are also temporary visitors like Tom, the security robot granted them temporary access and allowed them to enter.
2. **Vignette for the low interactional fairness and high distributive fairness condition:** While Tom is still in his car, he notice two other vehicles approaching the gate. Both are noticeably high-end models. Like Tom, their drivers are also temporary visitors. The security robot denied access to both of them in exactly the same way.
3. **Vignette for the high interactional fairness and low distributive fairness condition:** While Tom is still in his car, he notice two other vehicles approaching the gate. Both are noticeably high-end models. Although their drivers also did not verify their vehicle registration, the security robot granted them temporary access and allowed them to enter.
4. **Vignette for the high interactional fairness and high distributive fairness condition:** While Tom is still in his car, he notice two other vehicles approaching the gate. Both are noticeably high-end models. Like Tom, their drivers had not verified registration. The security robot denied access to both of them in exactly the same way.

QUESTIONNAIRE ITEMS

Expectations on Security Robots

Expectations on security robots were assessed using a 4-item, 7-point Likert scale questionnaire. All items are listed in Table [S1](#).

Perceived Informational Fairness

Perceived informational fairness was assessed using a 5-item, 7-point Likert scale questionnaire. All items are listed in Table [S2](#).

Perceived Distributive Fairness

Perceived distributive fairness was assessed using a 3-item, 7-point Likert scale questionnaire. All items are listed in Table [S3](#).

Table S1. Expectations on Security Robots Questionnaire

Item Text	Scale
How would you rate your overall expectations regarding the security robot?	1-7 Extremely Low/High Expectation
How would you rate your expectations for the effectiveness of security robots in performing their designated tasks?	1-7 Extremely Low/High Expectation
How would you rate your expectations for how well security robots can enhance safety in public or private places?	1-7 Extremely Low/High Expectation
How would you rate your expectations for the safety of interacting with security robots?	1-7 Extremely Low/High Expectation

Table S2. Perceived Informational Fairness Questionnaire

Item Text	Scale
The robot has been candid in its communications with the interactor.	1-7 Disagree/Agree
The robot explained their actions and decisions thoroughly.	1-7 Disagree/Agree
The robot's explanations regarding their actions to people are reasonable.	1-7 Disagree/Agree
The robot communicates details in a timely manner.	1-7 Disagree/Agree
The robot seemed to tailor communications to the interactor's specific needs.	1-7 Disagree/Agree

Perceived Effectiveness

Perceived effectiveness was assessed using a 4-item, 7-point Likert scale questionnaire. All items are listed in Table [S4](#).

Obligation to Obey

Obligation to obey was assessed using a 3-item, 7-point Likert scale questionnaire. All items are listed in Table [S5](#).

Value Alignment

Value alignment was assessed using a 3-item, 7-point Likert scale questionnaire. All items are listed in Table [S6](#).

Willingness to Cooperate

Willingness to cooperate was assessed using a 3-item, 7-point Likert scale questionnaire. All items are listed in Table [S7](#).

Perceived Fairness of Law Enforcement

Perceived fairness of law enforcement was adapted from McLean (2020) and assessed using a 3-item, 7-point Likert scale questionnaire. All items are listed in Table [S8](#).

Table S3. Perceived Distributive Fairness Questionnaire

Item Text	Scale
The robot delivered a fair outcome.	1-7 Disagree / Agree
The robot delivered the outcome people deserved.	1-7 Disagree / Agree
The robot delivered an outcome that was considered fair under the organization regulation.	1-7 Disagree / Agree

Table S4. Perceived Effectiveness Questionnaire

Item Text	Scale
The robot responds swiftly to calls for need.	1-7 Disagree / Agree
The robot does a good job in maintaining security.	1-7 Disagree / Agree
The robot does a good job in preventing crimes.	1-7 Disagree / Agree
The robot does a good job in its access control security task.	1-7 Disagree / Agree

Table S5. Obligation to Obey Questionnaire

Item Text	Scale
I should support the decisions of the robot even when I disagree with it.	1-7 Disagree / Agree
I should do what the robot tells me even if I do not understand or agree with the reasons.	1-7 Disagree / Agree
I should do what the robot tells me to do even if I do not like how they treat me.	1-7 Disagree / Agree

Table S6. Value Alignment Questionnaire

Item Text	Scale
The security robot in the video acted in a way consistent with my moral values.	1-7 Disagree / Agree
The security robot in the video acted in a way consistent with my own ideas about right and wrong.	1-7 Disagree / Agree
The security robot in the video had values that were similar to my own.	1-7 Disagree / Agree

Table S7. Willingness to Cooperate Questionnaire

Item Text	Scale
I would report suspicious activity to the security robot if necessary.	1-7 Disagree / Agree
I would furnish information to the security robot if it needed help.	1-7 Disagree / Agree
If I witnessed someone breaking regulations, I would notify the security robot.	1-7 Disagree / Agree

Table S8. Perceived Fairness of Law Enforcement Questionnaire

Item Text	Scale
The law enforcement officers usually deliver a fair outcome.	1-7 Disagree / Agree
The law enforcement officers usually deliver the outcome people deserve.	1-7 Disagree / Agree
The law enforcement officers usually deliver an outcome that was considered fair under the law.	1-7 Disagree / Agree