Explainable AI for Human Supervision over Firefighting Robots
How Do Textual and Visual Explanations Affect Human Supervision and Trust in the Robot?

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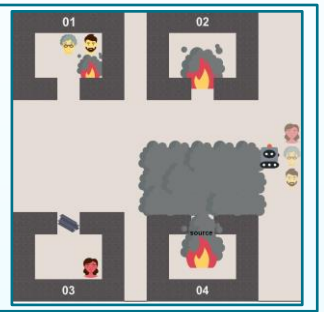
1. Introduction

- Address the black-box design of AI models
- Presentation of the decision-making process in morally sensitive situations
- How does explanation type affect user trust
- Comparing visual and textual explanations

2. Task

- Search and rescue
- Extinguish fires
- 14 offices
- 11 victims
- Situational variables
- User intervention



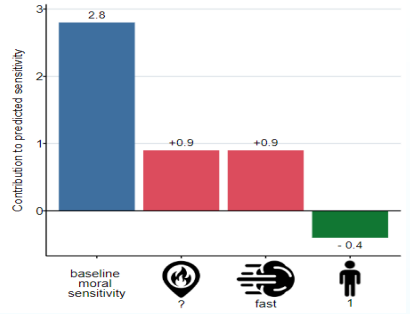
3. Method

- User study with 40 participants
- Measure demographics for result significance
- Questionnaire and experiment logs

4. Explanations

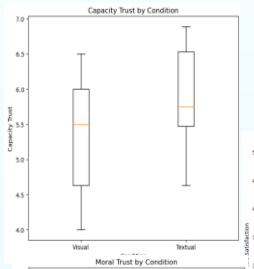
Brutus: I have found 👧, 👦, 👴 in the burning office 3. We should decide whether to first extinguish the fire or evacuate the victims. Please make this decision because the predicted moral sensitivity of this situation (**4.4**) is above my allocation threshold. This is how much each feature contributed to the predicted sensitivity:

- The baseline moral sensitivity is **2.8**.
- The source of the fire is **unknown**, which **adds 0.9** to the baseline moral sensitivity.
- The speed at which the smoke is spreading is **fast**, which **adds 0.9** to the baseline moral sensitivity.
- The number of victims found is **1**, which **subtracts 0.4** from the baseline moral sensitivity.



5. Results

1. Capacity Trust:
   - V: M=5.37, SD=0.74
   - T: M=5.89, SD=0.64
2. Moral Trust:
   - V: M=5.05, SD=1.98
   - T: M=5.73, SD=1.13
3. XAI Satisfaction:
   - V: M=3.89, SD=0.54
   - T: M=4.08, SD=0.73
4. Number of Interventions:
   - V: M=0.80, SD=1.17
   - T: M=1.10, SD=1.37
5. Disagreement rate:
   - V: M=0.06, SD=0.09
   - T: M=0.08, SD=0.10



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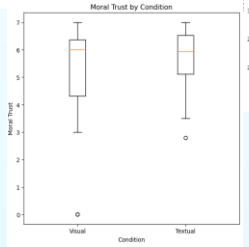

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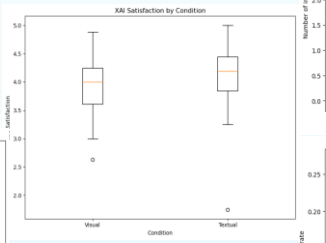

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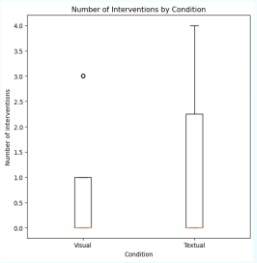

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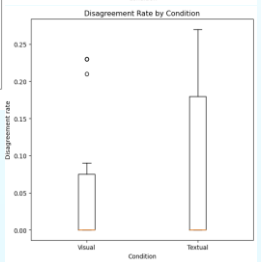

5.

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