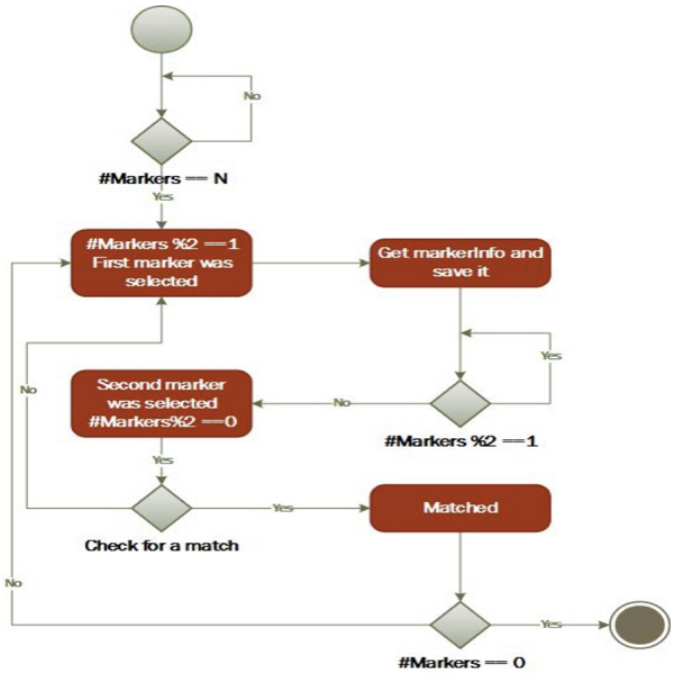
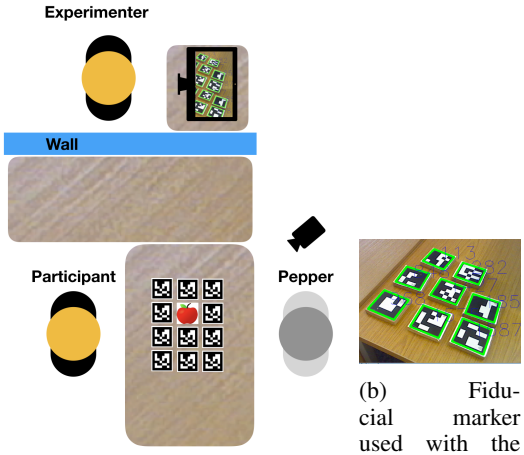


Figure 1: Activity diagram of the Finite State Machine (FSM).



(a) The setup.

(b) Fiducial marker used with the AR-marker-detection library

Figure 2: Experimental setup and system

robot they would be interacting with along with an image of that robot. A written and approved consent form was obtained from each participant prior to the experiment. The setup can be seen in **??**. The blocks used to play pairs are fitted on the side with a marker (see Figure **??**) and on the other side with images of fruits. A camera was used to recognize these markers and capture the game to display it for the experimenter. The role of the experimenter was to monitor the execution of the game via a screen; the experimenter was not visible to the participant.

Results and Discussion

Participants perceived Pepper to be significantly more trustworthy after interaction: pre-test (M = 2.8, SD = 0.92) post-test (M = 3.9, SD = 0.99), t(9) = -2.4, p = 0.04. While Huskys perceived trustworthiness did not increase significantly following exposure with: pre-test (M = 3.1, SD = 1.37), post-test (M = 3.9, SD = 0.994), t(9) = -1.45, p = 0.182. Before interaction, participants perceived Pepper as: interactive, lively, social, friendly, and relaxed. Participants perceived Pepper to be significantly more human-like after interaction with: pre-test (M = 2, SD = 0.82) post-test (M = 3.2, SD = 1.14), t(9) = -2.34, p = 0.044. In comparison, before exposure participants perceived Husky as: inert, stagnant, apathetic, and anti-social. Husky was perceived as machine-like before and after interaction with: pre-test (M = 1.8, SD = 1.03) post-test (M = 2.2, SD = 1.23), t(9)= -0.71, p = 0.49. The use of facial features was confirmed as having a facilitating effect on developing trust in Pepper with 80% of participants confirming this in both tests. The use of both verbal and visual communication by Pepper and Husky respectively increased levels of trust for 90% of participants; the anthropomorphic trait of a voice did not contribute to trust any more than the use of visual aids. Furthermore, 90% of participants believed that interaction assisted in increasing their trust in the robots following exposure to Pepper and Husky.

Conclusion

The aim of this paper was to investigate the relationship between human trust and robot appearance. After running the experiment and analyzing the results, we surmise that anthropomorphising robots physical appearance and increasing the occurrence of human-robot interaction are effective means of increasing human trust levels in their robot counterparts. A positive relationship was established between robot anthropomorphism and trust; the more anthropomorphic the robot, the more it can be trusted. The adoption of facial features on the robot is a technique used for anthropomorphising objects towards human-likeness and encouraged participants to trust Pepper more than Husky. It is worth noting that the outcome of interacting with a robot is highly dependent on the human involved in the interaction, that is, some participants were utterly reliant on the robot, others used it as a consultant, whilst others did not depend on the robot at all. This individuality and context specifically emphasizes the demand for further research to be undertaken to continually develop our understanding of HRI.

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