



# The Emotional Robot

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## Introduction

With the rapid increase in personal robots in the near future, the importance of human – robot interaction is of paramount importance. In particular, if the robot enters the home we want to examine what the best way to communicate with them is so that it is pleasant and easy for the user. In this project we attempted to uncover human perceptions on the appearance of robot hosts of home and office environments.

“I am somewhat skeptical about this whole ‘human-like robot’ concept. I guess I attribute it to movies like I-Robot and The Matrix” - 19 year old Male, Industrial Design

## Approach

Emotion plays a vital role in human communications, therefore we decided to augment the robot interface with emotional facial expressions.

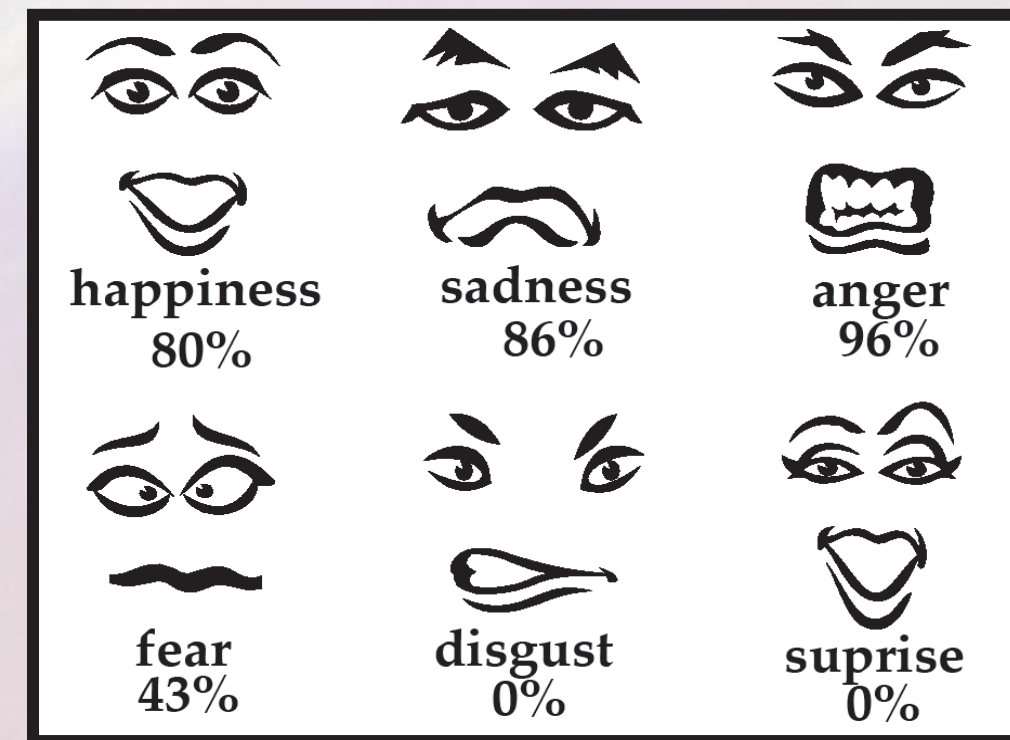
In order to find what human perception would be of a robot host, we created an extensive survey oriented around robot emotions and acceptance in certain environments.

## Recognizing Emotion

In creating faces for the robot to be able to respond with emotion to the user input. The interface can display any of the six main emotions portrayed below. The face will be shown in a graphical user interface which with the user can interact.

### Emotions and their Accuracy

While all of the faces were not clearly recognized, they were designed with regards to the research done by professors Scott Brave and Clifford Nass (Stanford University) in their Handbook of Human Computer Interaction.



## The Interface

This is where the robot gives its textual response to the user's input

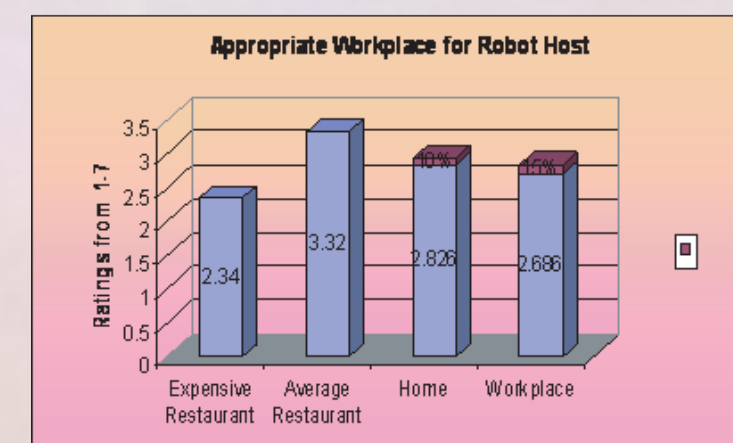
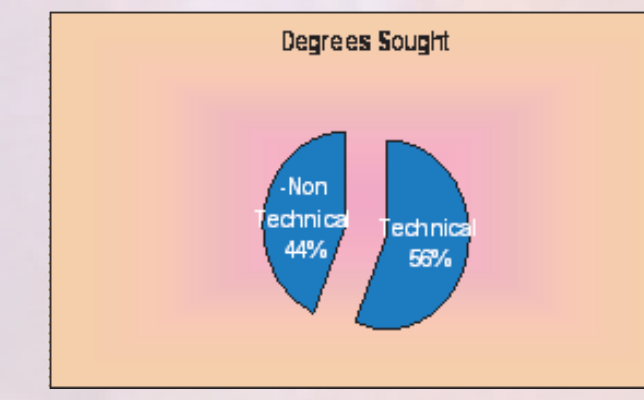
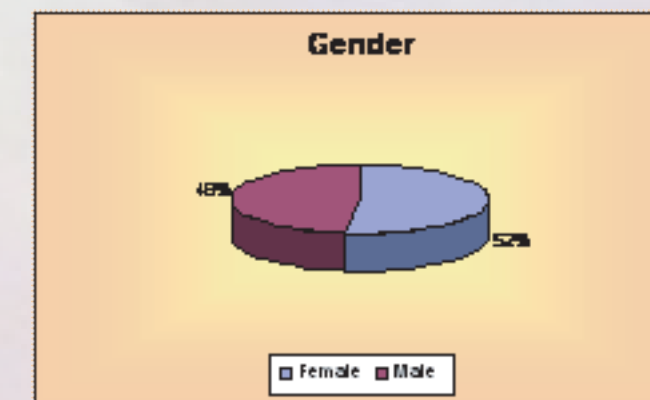
This takes the user to a map of the house that the robot is hosting

This is the input field where the user can enter commands and responses for the robot.

This button will take the user to list of recognized commands for the host

## Human Perception of Robot Host

- All surveyed were Georgia Tech students between the ages of 18-23.
- 87% of these students have had limited or no interaction with robots.

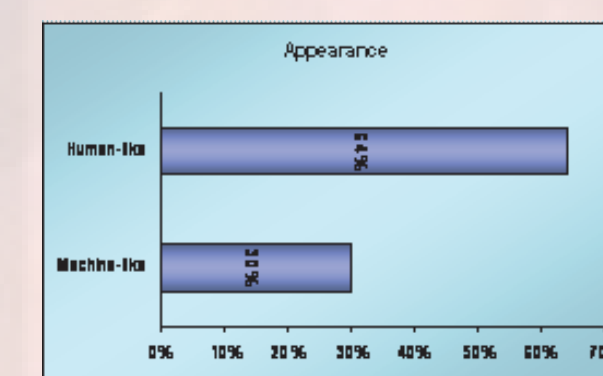


There was no correlation between gender or major and acceptance towards robots.

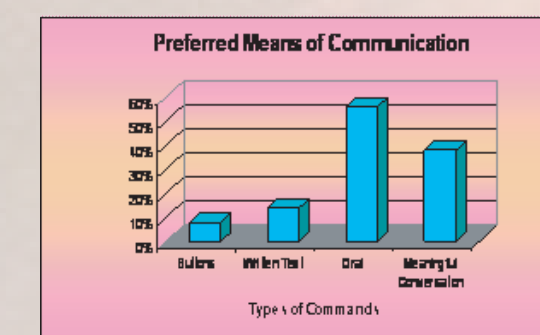
The majority of students felt that robots were too cold and therefore inappropriate for hosting people.

Many felt more accepting if the robots could demonstrate charisma and had a human appearance.

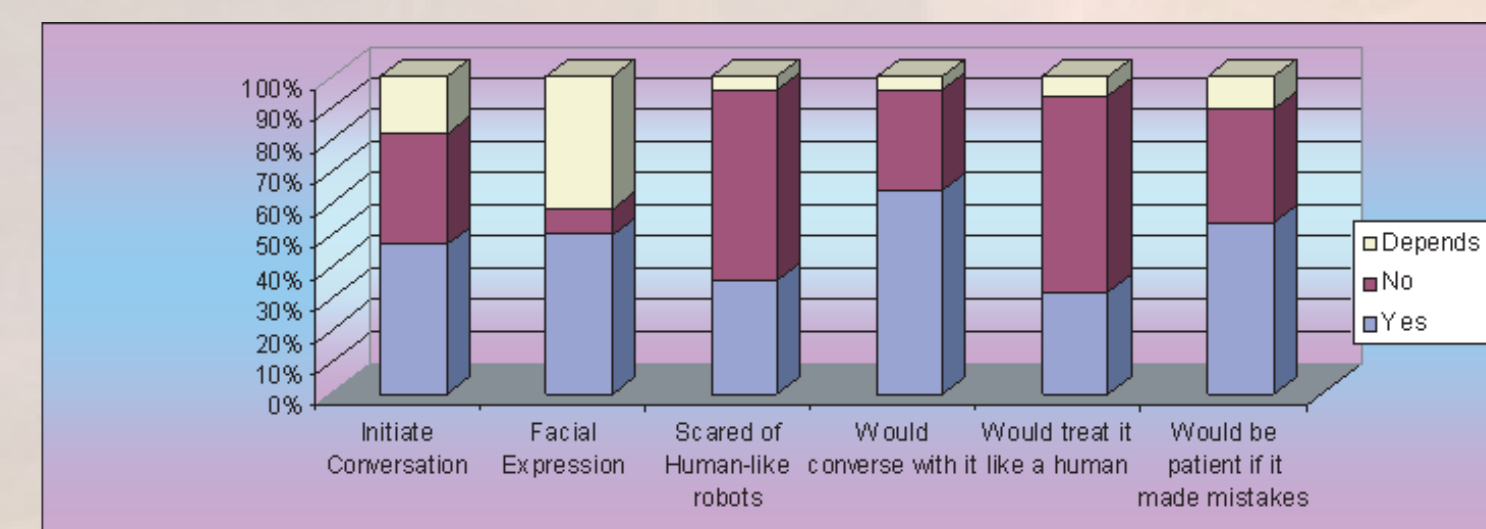
The students did not seem very accepting for robots in their homes. They envisioned the robot as either a computer (56%) or a secretary (22%).



Manners were the most important human trait the robot should have (93%). Knowing when to go away was another important trait the students recognized (91%).



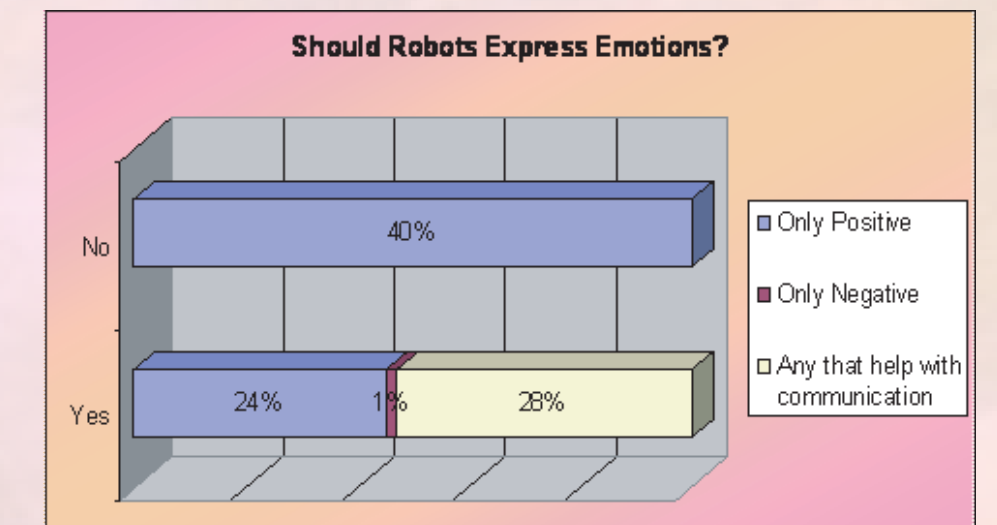
The students who preferred human-like robots mainly preferred to communicate by oral commands, the others wanted to distance themselves by other means of communication



The Yes/No questions varied depending on what the student envisioned as an acceptable robot.

## Conclusions

- Robots be portrayed as having the same facial emotive features that humans do and humans can interpret these emotions.
- People cannot easily identify emotions on robots even when all the correct features are present.



- Students did not feel comfortable with recognizing human emotions in robots.

There is a very general misunderstanding and even fear of robots amongst the current college generation. This misunderstanding leads to various different preferences in types of robots.

In order to get a more accurate overall opinion, the students should be educated in the area of robotics.

