Exploring Gender Representation in the ROBO-GAP Dataset

MAT2007 Introduction to Programming Project
Maastricht University

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Introduction

This project investigates whether feminine robots are underrepresented compared to masculine and neutral ones. Understanding how humans perceive robot gender matters because design choices can influence social acceptance, bias, and user interaction with technology. The question is both socially relevant and quantifiable, making it well suited for this project.

Dataset

The analysis uses the publicly available *ROBO-GAP* dataset (Perugia et al., 2022), which contains 251 robot characters evaluated by human participants for perceived masculinity, neutrality, and femininity. Each robot is assigned a categorical variable `gender_category` derived from these ratings. The dataset can be downloaded from the official website: https://robo-gap.unisi.it/.

Methods

The data were processed and analyzed using Python (`pandas` and `matplotlib`). The script `robo_gap_analysis.py` reads the dataset, counts how many robots are perceived as masculine, neutral, or feminine, and visualizes the results using a consistent color scheme (blue, grey, pink). Both bar and pie charts were generated to highlight the proportions. The code and outputs are publicly available at: https://github.com/Chaospossum/RoboGAP.

Results

The results show that out of 251 robots, 98 were perceived as masculine (39.0%), 115 as neutral (45.8%), and 38 as feminine (15.1%). Both the bar and pie charts reveal that feminine robots are significantly less represented compared to the other categories. The quantitative visualization highlights a clear imbalance.

Discussion

This imbalance may reflect existing design biases—robotic characters are often built with traditionally masculine features or neutral aesthetics. It could also indicate human perceptual bias in interpreting robotic form and voice. The small proportion of feminine robots suggests limited diversity in design and representation within available datasets.

Conclusion

Feminine robots are notably underrepresented in the ROBO-GAP dataset. Future work should investigate whether this imbalance persists in other datasets and explore methods to promote inclusivity in robot design.

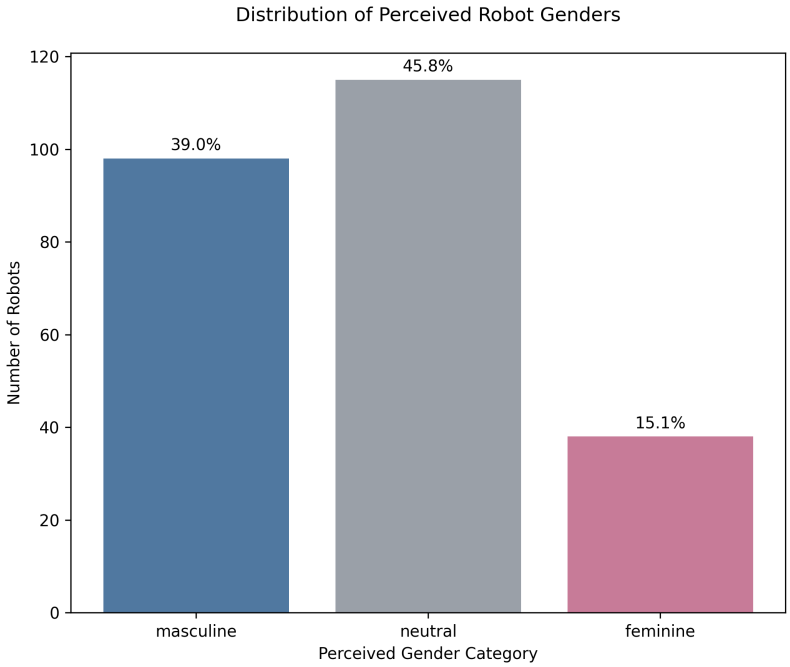

Figure 1: Distribution of perceived robot genders in the ROBO-GAP dataset.

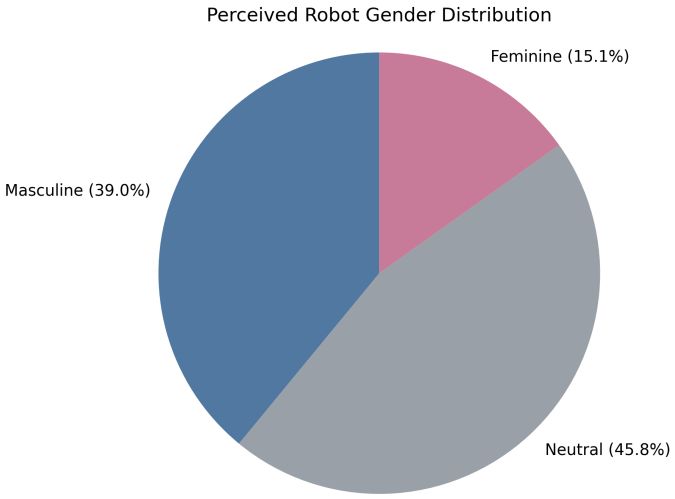

Figure 2: Proportional representation of perceived robot genders.

Acknowledgments

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https://github.com/Chaospossum/RoboGAP.