

Empirical Investigation of Gender Differences in Information Processing Style, Tinkering, and Self-Efficacy for Robot Tele-Operation

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Abstract : As robots become more ubiquitous, it is significant for us to understand how different groups of people respond to possible ways of interacting with the robot. In this study, we focused on gender differences while users were tele-operating a humanoid robot that was physically co-located with them. We investigated three factors during the human-robot interaction (1) information processing strategy (2) self-efficacy and (3) tinkering or exploratory behavior. The experimental results show that the information on how to use the robot was processed comprehensively by the female participants whereas males processed them selectively ($p < 0.001$). Males were more confident when using the robot than females ($p = 0.0002$). Males tinkered more with the robot than females ($p = 0.0021$). We found that tinkering was positively correlated ($p = 0.0068$) with task success and negatively correlated ($p = 0.0032$) with task completion time. Tinkering might have resulted in greater task success and lower task completion time for males. Findings from this research can be used for making design decisions for robots and open new research directions. Our results show the importance of accounting for gender differences when developing interfaces for interacting with robots and open new research directions.

Keywords : humanoid robots, tele-operation, gender differences, human-robot interaction

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