

Computational Human-Robot Interaction

The field of Human-Robot Interaction (HRI) is expanding and maturing and HRI is a research topic which is increasingly solicited and included in the broader robotics community. Computational Human-Robot Interaction provides the reader with a systematic overview of the field of Human-Robot Interaction over the past decade, with a focus on the computational frameworks, algorithms, techniques, and models currently used to enable robots to interact with humans. Within the field of robotics, HRI poses distinct computational challenges, in each of the traditional core research areas: perception, manipulation, planning, task execution, navigation, and learning. Computational Human-Robot Interaction addresses these challenges by surveying twelve publication venues and including work that tackles computational HRI challenges, categorized along eight topics: (1) perceiving humans and their activities; (2) generating and understanding verbal expression; (3) generating and understanding non-verbal behaviors; (4) modeling, expressing, and understanding emotional states; (5) recognizing and conveying intentional action; (6) collaborating with humans; (7) navigating with and around humans; and (8) learning from humans in a social manner. For each topic, promising future research areas are identified. Computational Human-Robot Interaction is an ideal reference for any researcher who wants to understand the research that has been done so far in the area, and potentially get involved with their own avenue of research.



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