Analysis and Semantic Modeling of Modality Preferences in Industrial Human-Robot Interaction

Abstract:
Intuitive programming of industrial robots is especially important for small and medium-sized enterprises. We evaluated four different input modalities (touch, gesture, speech, 3D tracking device) regarding their preference, usability, and intuitiveness for robot programming. A Wizard-of-Oz experiment was conducted with 30 participants and its results show that most users prefer touch and gesture input over 3D tracking device input, whereas speech input was the least preferred input modality. The results also indicate that there are gender specific differences for preferred input modalities. We show how the results of the user study can be formalized in a semantic description language in such a way that a cognitive robotic workcell can benefit from the additional knowledge of input and output modalities, task parameter types, and preferred combinations of the two.

Kongress- / Buchtitel:
Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

Jahr: 2015
Monat: Sep
Seiten: 1812–1818
Volltext / DOI: doi:10.1109/IROS.2015.7353613