Comforting touch in human-robot interaction: factors influencing pleasantness and trust.

Irene Valori*†[1,2], Yichen Fan[3,4], Merel Jung[5], and Merle Fairhurst[1,2,4]

[1]Centre for Tactile Internet with Human-in-the-Loop (CeTI), Technische Universität Dresden – Germany

[2]Chair of Acoustics and Haptics, Technische Universität Dresden – Germany

[3]Chair of Industrial Design Engineering, Technische Universität Dresden – Germany

[4]6G-Life – Germany

[5]Department of Cognitive Science and Artificial Intelligence, Tilburg University – Netherlands

Abstract

Our lives are permeated by interactions with technologies that are not just tools but increasingly have social characteristics that make them interaction partners. Humanoid robots are a special case of technology designed for social interaction. However, the social norms that apply to human-robot interaction are still to be understood (and perhaps constructed), which is particularly important for more intimate exchanges, as in the case of social touch. Do we want to be able to touch and be touched by a robot? What would the effects of social touch in this context be? Here we present an online study in which participants observed scenes of human-human or human-robot interactions involving comforting touch. In a 2x2 design, we manipulated the characters' roles, with either the human or the robot being in a vulnerable situation or comforting the other, initiating or reciprocating touch. The results are discussed with respect to how real, appropriate and pleasant the touch is perceived, and how trustworthy the characters are rated in the different scenarios. We discuss how ratings are influenced by individual social touch preferences and predisposition to trust others in everyday life. A future step of the study sees the use of virtual reality to immerse people in similar first-person human-robot touch scenarios. These studies offer fundamental insights to guide the implementation of social touch in human-robot exchanges, which is too often simply trying to replicate the principles and uses of touch between humans, instead of understanding its specific potential, applications and limitations.

Keywords: Human, Robot interaction, comforting touch, trust, initiation, reciprocity, vulnerability

*Speaker

†Corresponding author: irene.valori@tu-dresden.de