Achieving Human-Like Qualities in Interactive Virtual and Physical Humanoids

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This special issue is concerned with the simulation/recreation of human-like capabilities for human-machine / human-robot interaction. Making the machine more human-like rather than making the user more robot-like is recurrently perceived as a requisite for humans to accept artifacts as (social) partners in everyday life, and to achieve socially meaningful and engaging interactions with them. To advance the state of the art towards new paradigms of increasingly human-like interaction, we propose to investigate which aspects of human communication schemes are needed and interesting to recreate in interactions with artifacts. The type of interactions we are interested in this issue use some form of embodiment through humanoid robots or virtual agents. However, achieving human-like qualities in interaction is not limited to the physical aspects of the embodiment but cover a wide range of aspects such as:

- *Behavior*: the behaviors that the robot or virtual agent must display are tightly linked to features of communication and dialog management as well as to emotion. By essence, these behaviors are multimodal.
- *Expression in interaction*: what are the different expressive elements needed to create a socially meaningful and engaging interaction? While the previous topic looks at behavioral aspects of the communication, this one looks at the functions of communication.
- *Creation of bonds*: interaction requires at least 2 participants and usually involves the exchange of different types of information. However, information exchange is not enough: interaction also requires the establishment of some sort of link between the participants, otherwise no exchange could happen. Under this link we investigate the notion of engagement among the interacting partners, and the social and affective aspects of the relationship.
- *Developmental and evolutionary models*: studying the underlying mechanisms and processes by which interactions form and develop is of paramount importance in order to understand their nature and their present form. This can also greatly improve the establishment of long-term interactions with artifacts.
- *Presence*: ECAs and robots have impact on the interaction by their presence as well as their behavior and communication style and function. Is there any differences between physical and virtual presence of these human-like entities? Is their presence different from human presence? What is the role of embodiment in presence?
- *Agency*: what are the types of interaction and features that virtual and physical artifacts must show in order to be perceived as “agents” by humans? Do we perceive those agents as being “like us”? How does this affect the interaction?
- *Architectures*: which architectures are better suited to build such human-like capabilities for interaction?

To investigate these issues, we seek high-quality, original contributions from relevant disciplines, including (but not limited to) Embodied Conversational Agents, Virtual Humans, Humanoid, Social, and Epigenetic Robotics, Psychology, Sociology, and Philosophy.

Please send your contributions (in PDF or compressed postscript only, please do not send Word files) to both editors: Catherine Pelachaud (c.pelachaud@iut.univ-paris8.fr) and Lola Cañamero (L.Canamero@herts.ac.uk).

Important dates:

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