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# Guest editorial: Social robots, services and applications

Guest editorial

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## Preface

A social (companion) robot, such as Pepper, Buddy, Miko, Lynx, Misty Robotics' Misty II and ASUS's Zenbo, are devices that comprise a physical humanoid robot component that connects through a network infrastructure to online services that enhance traditional robot functionalities. Today's robots can easily capture a user's physical activity state (e.g. walking, standing, and running) and store personalized information (e.g. face, voice, location and activity pattern) through many devices like cameras, microphones and sensor.

Humanoid robots often behave like natural partners that could engage in social interactions with human users, with features such as speech, gestures and eye-gaze, referring to users' personal data and social context. The user behavior of anthropomorphic robot users shows that they are more open to robots. Some prior research shows that it is much easier for a humanoid robot to gain user trust. Social robots can interact with humans by performing tasks that adhere to specific social cues and rules. They offer features such as human facial, voice, and emotion recognition, including adding human-like personality to their artificial intelligence (AI)-based capabilities to achieve better human-machine interaction. Particularly during the COVID-19 pandemic, robotic applications can save human resources and reduce direct contact to avoid virus transmission (Yu *et al.*, 2022; Huang *et al.*, 2021, 2022).

One of the main themes of this special issue is human-robot Interaction (HRI). HRI is a research area whose purpose is to understand, design and evaluate robots for use by or with humans. The foundations of this special issue will set the baseline for understanding how HRI can influence and change business practices and people's lifestyles. This special issue includes 13 articles related to HRI described below.

The first group of four papers focused on user service improvement and enjoyment with robotic applications. Edwards *et al.* (2022) discussed the relationship between self-reported levels of acute stress, perceived social support and interactions with robot animals in an academic library. Fuentes-Moraleda *et al.* (2022) presented an exploratory study of a multidimensional instrument for measuring willingness to accept social robots in museum contexts. Tung and Campos (2022) introduced a social robot app called the Music Buddy that can play situational music based on users' electroencephalogram data. Finally, Hsiao and Chen (2022) studied service quality, trust and satisfaction to predict users' continuance intention to use a food-ordering chatbot through an online questionnaire. Readers may also be interested in reading Guth and Vander Meer (2017) on telepresence robotics in an academic library and Araujo *et al.*'s (2021) review of social robots on depressive symptoms in older adults.

The second group of two papers focused on educational applications. Weng *et al.* (2022) presented the quantitative and qualitative data based on a project on computational thinking in problem-solving skills and programming learning attitudes by LEGO robotics kits. Hsia *et al.* (2022) discussed the issues of robot programming sustainability and the ability to solve problems integrated into curriculum instruction in clubs. Please watch out for our upcoming special issue on "Contemporary learning on mobile devices and social media" and also our call for paper on the journal website for part 2 of this special issue due to overwhelming responses.

The third group of four papers focused on AI applications. Asemi *et al.* (2022a) presented a fully automated usability evaluation method for interactive social robots by a fuzzy inference system based on ISO 9241-210:2019. Asemi *et al.* (2022b) studied the thematic and conceptual



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relationship in published papers on deep learning and smart manufacturing and its possible implications. Next, [Agarwal et al. \(2022\)](#) reviewed the literature on chatbots and virtual assistants, which showed that this area has been increasing in the last few years. Finally, readers may be interested in reading [Harisanty et al. \(2022\)](#), exploring leaders, practitioners and scientists' awareness of AI in libraries and another review of AI in libraries ([Cox et al., 2019](#)). Please also watch out for our call for paper on the journal website for "AI and Blockchain for Information and Library Sciences – Challenges and Possibilities."

The fourth group of three papers focused on security enhancement applications. [Zhang et al. \(2022\)](#) presented a real-time autonomous information communication mechanism to predict the traffic between different social robots. [Chen et al. \(2022\)](#) presented a fault-tolerant content list management unit for real-time streaming systems based on intelligent robot claw machines. [Basudan \(2022\)](#) presented an efficient attribute-based data sharing scheme to enforce security and access control over health sensing data on the Internet of Medical Robotic Things (IoMRT). [Alamer \(2022\)](#) discussed tracking mobile robot devices for a secure framework of the Internet of Robotic Things (IoRT) network applications by a secure, anonymous tracing method. Readers may also be interested in reading [Yang and Liao \(2010\)](#) on using robot meta-tags to allow or refuse software robots on websites and express webmasters' online copyright authorization policies.

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