

Designing Social Robots as Motivating Learning Companions for Online Courses (Poster)

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Abstract

In current times, fast changes and advances in technology rapidly turn acquired knowledge to obsolete, especially within the field of computer science and programming. One of the efficient ways for keeping up and learning new skills is by participating in online courses. However, in online learning environments, students are studying alone without the support of fellow classmates or real-time interaction with the teacher. This lack of social interaction may result in loneliness and low motivation, which reflects in high dropout rates in MOOCs (Reich & Ruipérez-Valiente, 2019). Social robots, which are designed to interact and communicate with humans, can potentially assist online learners by creating a motivating social interaction that will overcome these challenges (Belpaeme et al., 2018; Li, 2015; Rosenberg-Kima et al., 2020; van Minkelen et al., 2020). Thus, this research aims to explore various ways of designing and integrating a social robot as a motivating learning companion for students who participate in asynchronous online courses. Based on Self-Determination Theory (Ryan & Deci, 2000), we designed four conditions of a motivating learning companion robot by controlling its verbal and non-verbal actions. The four conditions were (1) providing choice options (autonomy), (2) providing positive feedback (competence), (3) providing emotional connection (relatedness), and (4) providing all three together (autonomy, competence, and relatedness). Each condition was captured in a short video presenting the social robot Nao as a learning companion for a student in an online programming course. In this study, 200 participants are asked to complete an online survey after watching one of the videos randomly. The survey explores the effect of the designed conditions that were shown in the videos on attitudes towards the motivating learning companion robot, as well as on attitudes towards social robots in general. The results of this study may be applied in the design and possible

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integration of future social robots that will perform as motivating learning companions for adults and even children who are participating in distance online learning for various reasons, such as the COVID-19 pandemic.

Keywords: Social Robots, Learning Companions, HRI, Online Courses, Computer Science Education.

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