Robots for Learning

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ABSTRACT

An increasing amount of Human-Robot Interaction (HRI) research is focused on the development of social robot tutors. While robots have been popular as a tool for STEM teaching, the use of robots as tutors is novel. The field of HRI has started to report on how to make effective robot tutors. However, many challenges remain. For instance, what interaction strategies aid learning, and which hamper learning? How can we deal with the current technical limitations of robots? Answering these and other questions requires a multidisciplinary effort, including contributions from pedagogy, developmental psychology, (computational) linguistics, artificial intelligence and HRI, among others. This abstract provides an overview of the current state-of-the-art in robot tutors and describes the aims of the Robots for Learning (R4L) workshop in bringing together a multidisciplinary audience for furthering the development of market-ready educational robots.

Keywords

Human-Robot Interaction, Robots in Education, Tutor Robots, Child-Robot Interaction

1. INTRODUCTION

An increasing amount of HRI research is focused on the development of social robots acting as tutors. While robots have been popular as a focus for STEM teaching (see Lego Mindstorms or Thymio [3]), the use of robots as tutors is novel. The field of HRI has started reporting on how to make effective robot tutors and how to measure their efficacy [2, 4]. Social robot tutors have the potential to enhance learning via kinesthetic interaction [], can improve the learner's self-esteem [], and can provide empathic feedback [1]. Finally, robots have been shown to engage the learner, to motivate her in the learning task or to enhance collaboration in a group []. However, many challenges remain and this workshop aims to bring together a multidisciplinary group of researchers to discuss these challenges and share expertise.

The second iteration of this workshop builds on the previous version hosted at the IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN), 2016. The previous workshop utilised keynote speakers, participant speakers, and small group discussions to raise issues and challenges facing the community researching robots for use in delivering educational content. The second version of this workshop seeks to engage with more researchers in the field, and draw a more multidisciplinary audience to further the development of market-ready educational robots.

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2. BACKGROUND

3. OUTLINE OF THE WORKSHOP

The aim of this workshop is to engage scholars who wish to gain expertise in education and in robotics. Participants will benefit from hearing from the forefront of field and from discussions on how to move from fundamental research towards the development of market-ready educational robots.

The workshop aims will be achieved through

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