Robots for Learning - R4L

Inclusive Learning

Wafa Johal
CHILI/LSRO Labs
École Polytechnique
Fédérale Lausanne
Lausanne, Switzerland
wafa.johal@epfl.ch

James Kennedy
Disney Research
Pittsburgh, USA
james.kennedy@disneyresearch.com

Vicky Charisi
University of Twente, NL
University College London,
U.K
vicky.charisi.14@ucl.ac.uk

Hae Won Park
Personal Robots Group
MIT Media Lab
Cambridge. MA
haewon@media.mit.edu

Ginevra Castellano
Department of Information
Technology
Uppsala University
Sweden
ginevra.castellano
@it.uu.se

Pierre Dillenbourg
CHILI Lab
École Fédérale Polytechnique
Lausanne
Switzerland
pierre.dillenbourg@epfl.ch

ABSTRACT

In recent years, research in Human-Robot Interaction has increasingly attracted interest from the field of education in particular. However, this interest is not new: the logo turtle entered schools nearly 40 years ago. Over this period, robots have changed a lot: sequentially or eventually programmable, they also integrate a wide spectrum of sensors and actuators. Hence, new applications in educational contexts can now be envisioned. The Robots for Learning (R4L) workshop is in its 4th series, and the focus of this edition is on *inclusive learning*. Robots as educational agents have been studied and deployed in various forms - as tools, mediators, tutors, and peers. In this workshop, we aim to discuss the approaches and challenges of developing these educational robots to be more inclusive, helping learners of different ages, backgrounds, genders, and learning abilities. Learners with difficulties often need more attention or personalised training. With this workshop, we aim at discussing recent advances in empirical and theoretical state-of-the-art research contributions on human-robot interaction in educational contexts on the following challenges: How to design robots to adapt to learners abilities? How to build long-term learning with robots? How can robots engage learners in playful learning activities? How can robots assist learners in multimodal learning scenarios?

1. INTRODUCTION & BACKGROUND

Human-Robot Interaction (HRI) research is focused on the development of applications of service robots in everyday life.

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2. 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 presentations and discussions. Prospective participants are invited to submit 4-6 page papers describing work in progress, or containing preliminary results to discuss with the community. In order to stimulate interactions, the workshop will include short position paper presentations and poster sessions. The afternoon will be dedicated to discussion, including both a panel session and semi-structured group discussions.

Organizers

Wafa Johal, École Polytechnique Fédérale Lausanne, Switzerland. Wafa Johal obtained her PhD in 2015 from the University of Grenoble (France) focusing on bodily signals in Child-Robot Interaction. She is a Postdoctoral researcher in the Computer and Human Interaction Laboratory for Learning and Instruction at EPFL. She works within the CoWriter and Cellulo projects dealing with robots for education.

James Kennedy, Disney Research, Pittsburgh, USA. James Kennedy received his PhD from Plymouth University, U.K. in 2017 for his work using social robots to tutor children. During his PhD, he worked in collaboration with the EU-funded DREAM, ALIZ-E, and L2TOR projects. He currently works as part of the Language Based Character Interaction group at Disney Research, focusing on the development of AI characters.

Vicky Charisi, University of Twente, The Netherlands and University College London, U.K. Vicky Charisi is a postdoctoral researcher at the Human-Media Interaction group at the University of Twente. She completed her PhD studies at the UCL Institute of Education, U.K. focusing on child development within computer-supported music-making activities. Currently, she works on the topic of child-robot interaction designing robots for formal educational settings

(EASEL) and playful activities (SQUIRREL) for children.

Hae Won Park, Massachusetts Institute of Technology, USA. Hae Won Park is a Research Scientist at the Personal Robots Group at the MIT Media Lab. Her research focuses on personalization of social robots to enable a long-term interaction between users and their robot companions. Her work spans a range of applications including education for young children and well-being benefits for the elderly. Hae Won received a PhD from Georgia Tech where she also co-founded Zyrobotics, an assistive education robotics startup.

Ginevra Castellano, Uppsala University, Sweden. Ginevra Castellano is an associate senior lecturer in intelligent interactive systems at Uppsala University, where she leads the Social Robotics Lab. She was the coordinator of the EMOTE project (2012-2016), which developed educational robots to support teachers in a classroom environment.

Pierre Dillenbourg, École Fédérale Polytechnique Lausanne, Switzerland. Former teacher in elementary school, Pierre graduated in educational science (University of Mons, Belgium). His research on learning technologies started in 1984. He obtained a PhD in computer science from the University of Lancaster (UK), in artificial intelligence applications for educational software. He is currently full professor in learning technologies, head of the CHILI Lab involved in both CoWriter and Cellulo projects.

3. ACKNOWLEDGMENTS

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