

## Abstract

# *IEEE International Symposium on Robot and Human Interactive Communication (IEEE RO-MAN 2016)*

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### **Title**

#### **Workshop on Robots for Learning : R4L**

More and more research in Human-Robot interaction are being applied in assistance to human in several context. Robots for educational purposes have been an emerging application this past few years. Some robotic platforms have been developed for educational purposes (i.e. Thymio, Lego Mindstorm). These platforms are mainly used in STEM. Several research projects have aimed to apply HRI to education and learning in order to teach other disciplines such as languages [1] or handwriting [2].

Robots have started to show a real potential as learning or teaching assistant for children, elderly or people with deficiencies. Indeed, robots show the potential to improve individual adaptation by learning from and with the user [3]. Robots have also the potential to enhance learning via kinesthetic interaction. Robots have shown to enable user to improve its self-esteem and to provide adaptive empathic feedback [4]. Finally, robots can be a mean to engage the learner and to motivate him in the learning task.

There exists also dissemination events, often with a large audience, that aim to increase the presence of robotic activities in education: robotic festivals, robotic competitions. With this workshop we propose to create a specific venue for academic research on educational robotics, based on the scientific quality of papers and not necessarily on their immediate application in schools. The aim of this workshop is to engage scientists who aim to gain a dual expertise in education and in robotics (from instructional design to inverse kinematics, ROS to ZPD, Markov to Piaget etc.) into a new interdisciplinary community working on educational robotics. The format of the workshop is oriented towards discussion shaped by participant contributions.

### References:

- [1] Tanaka, F. and Matsuzoe, S., 2012. **Children teach a care-receiving robot to promote their learning: Field experiments in a classroom for vocabulary learning.** Journal of Human-Robot Interaction, 1(1).
- [2] Hood, D., Lemaignan, S. and Dillenbourg, P., 2015, March. **When children teach a robot to write: An autonomous teachable humanoid which uses simulated handwriting.** In Proceedings of the Tenth Annual ACM/IEEE International Conference on Human-Robot Interaction (pp. 83-90). ACM.
- [3] Okita, S.Y. and Schwartz, D.L., 2013. **Learning by teaching human pupils and teachable agents: The importance of recursive feedback.** Journal of the Learning Sciences, 22(3), pp.375-412.
- [4] Castellano, G., Leite, I., Paiva, A., & McOwan, P. W. (2012). **Affective teaching: learning more effectively from empathic robots.** Awareness magazine: Self-Awareness in Autonomic Systems.

### **Website**

<http://r4l.epfl.ch>