The Open University

Open Research Online

Citation

Rosewell, Jonathan (2014). Practical activities in robotics: hands-on or simulator? In: HEA STEM Annual Learning and Teaching Conference: Enhancing the STEM Student Journey, 30 Apr - 1 May 2014, Edinburgh.

URL

https://oro.open.ac.uk/40208/

License

None Specified

Policy

This document has been downloaded from Open Research Online, The Open University's repository of research publications. This version is being made available in accordance with Open Research Online policies available from Open Research Online (ORO) Policies

Versions

If this document is identified as the Author Accepted Manuscript it is the version after peer review but before type setting, copy editing or publisher branding

Practical activities in robotics: hands-on or simulator?

Jon Rosewell
The Open University
Walton Hall
Milton Keynes
Jon.Rosewell@open.ac.uk
http://www9.open.ac.uk/mct/people/jon.rosewell

Abstract

The Open University (OU) module *Robotics and the meaning of life: a practical guide to things that think* (T184) was an introductory course on robotics which ran from 2003-2011 and continues to run in an updated form. This is taught online but contains a strong practical element.

Practical activities in the initial plans for the course were designed around the Lego Mindstorms RCX robotics kit. Students would build and program an autonomous wheeled robot able to carry out a range of tasks of increasing complexity. A new programming environment, OU RobotLab, was developed at the Open University to support the needs of adult learners with no previous experience of programming and to make extended use of the capabilities of the Mindstorms kits.

However, it was not practical for the Open University to provide Lego kits for student use at scale in this module. Instead, RobotLab was extended to include a simulation of the robot. Students were thus offered the choice of carrying out practical activities either as simulation or using real hardware, provided they had access to a suitable kit.

Students were surveyed at the start and end of each presentation of the course to look at the attitudes and experiences of students to these different approaches to practical work. This gives us an opportunity to ask: can student learn practical skills at the computer or is it necessary to have hands-on practical experience?

Keywords
Practical work, simulation, robotics, distance education