

The Personal Exploration Rover

The Ground-up Design, Deployment and Educational Evaluation of an Educational Robot for Unmediated Informal Learning Sites

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ABSTRACT: Robotics brings together learning across mechanism, computation and interaction using the compelling model of real-time interaction with a physically instantiated intelligent device. The project described here is the third stage of the Personal Rover Project, which aims to produce technology, curriculum and evaluation techniques for use with after-school, out-of-school and informal learning environments mediated by robotics. Our most recent work has resulted in the Personal Exploration Rover (PER), whose goal is to create and evaluate a robot interaction that will educate members of the general public in an informal learning environment and capitalize on the current enthusiasm and excitement produced by NASA's Mars Exploration Rovers (MERs). We have two specific goals of teaching about the role of rovers as tools for scientific exploration and teaching about the importance of robot autonomy. To this effect we have designed an interactive, robotic museum exhibit which has been deployed at six locations across the United States. Here we describe the robot hardware and software designed for this task, the exhibits developed, and the results of formal evaluation of the exhibits' educational impact on museum visitors.