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2D-Modeling with Lego Mindstorms

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Abstract : The whole work is based on possibility to use Lego Mindstorms robotics systems to reduce costs. Lego Mindstorms consists of a wide variety of hardware components necessary to simulate, programme and test of robotics systems in practice. To programme algorithm, which simulates space using the ultrasonic sensor, was used development environment supplied with kit. Software Matlab was used to render values afterwards they were measured by ultrasonic sensor. The algorithm created for this paper uses theoretical knowledge from area of signal processing. Data being processed by algorithm are collected by ultrasonic sensor that scans 2D space in front of it. Ultrasonic sensor is placed on moving arm of robot which provides horizontal moving of sensor. Vertical movement of sensor is provided by wheel drive. The robot follows map in order to get correct positioning of measured data. Based on discovered facts it is possible to consider Lego Mindstorm for low-cost and capable kit for real-time modelling.

Keywords : LEGO Mindstorms, ultrasonic sensor, real-time modeling, 2D object, low-cost robotics systems, sensors, Matlab, EV3 Home Edition Software
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