

## Lego Mindstorms as a Simulation of Robotic Systems

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**Abstract :** In this paper we deal with using Lego Mindstorms in simulation of robotic systems with respect to cost reduction. Lego Mindstorms kit contains broad variety of hardware components which are required to simulate, program and test the robotics systems in practice. Algorithm programming went in development environment supplied together with Lego kit as in programming language C# as well. Algorithm following the line, which we dealt with in this paper, uses theoretical findings from area of controlling circuits. PID controller has been chosen as controlling circuit whose individual components were experimentally adjusted for optimal motion of robot tracking the line. Data which are determined to process by algorithm are collected by sensors which scan the interface between black and white surfaces followed by robot. Based on discovered facts Lego Mindstorms can be considered for low-cost and capable kit to simulate real robotics systems.

**Keywords :** LEGO Mindstorms, PID controller, low-cost robotics systems, line follower, sensors, programming language C#, EV3 Home Edition Software

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