Fuzzy logic controller for two wheeled EV3 LEGO robot

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ABSTRACT
The unstable nature of a two-wheeled inverted pendulum system has raised attention many researchers to approach various controllers that can stabilize the system. Most researchers used Arduino and NXT LEGO robot as a platform to analyze the performance of the proposed controller. In this project, fuzzy logic controller is used as a controller to stabilize the two wheeled EV3 LEGO robot through Simulink-Matlab simulation. The dynamic modelling of the system is derived using Euler-Lagrange method. Based on the proposed controller, the analysis of the simulation results show that the system achieves zero degree of tilt angle in less than 2 seconds. Various membership function of Fuzzy Logic control are tested and analyzed. The simulation results indicate that fuzzy logic controller can stabilize the two wheeled EV3 LEGO robot effectively.

KEYWORDS:
Fuzzy Logic controller; Two-wheel Lego EV3 Robot and Stabilization