ABSTRACT

DEVELOPING ROBOT ARM ABB IRB 140 PATH FOLLOWING SYSTEM FOR LINEAR AND CURVED PATH ON A SURFACE USING COPPELIASIM SIMULATION SOFTWARE

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The robotic industry is a fast growing industry in the world at present. There are many advanced types of robots at use and one of them is a robot arm. Robot arms are normally operated for path planning and automation purposes such as pick and place, but other than that, their path following, along with collision detection algorithms are also applicable for drawing shapes or writing words on a surface. Such usage can aid illiterate individuals and provide teaching assistants in educational places where handwritten based lectures are still necessary. The purpose of this research is to develop a path following system for a six degrees of freedom robot arm to write on a surface, using kinematics formulation based on Coppelia's kinematics (simIK) plugin. The software used to design and simulate the path following system is CoppeliaSim because it allows multiple functional features to be used and accepts user input as the foundation to the whole operation, as what to write. This thesis paper provides fundamental basics of robot arm simulation and operation, and can therefore be used as a reference for students who are interested in a similar field of study.

Keywords: Robot arm ABB IRB 140, path following, linear path, curved path, surface, user input, CoppeliaSim, simulation software