

Abstract: Design of a Reconfigurable Modular Robot and Motion Study

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Abstract

This paper deals with design of the intelligent mechanism and working algorithm for a cube-style modular robot. The modular robot changes own shape according to the working environment. Therefore it is suitable to work in the search and rescue area where requires the adaptation of situation as a shape of snake, legged robot or humanoid. Each of modular unit has to install own controller on the body and drive the body to give some mobility autonomously, also combine and separate its module with docking and unlocking mechanism. In this paper we propose design concept of our modular robot including the combination, control, and communication algorithm between modules. We also consider some motion with respect to various connections after doing torque verification. The motions are verified with some simple action and the effectiveness of method is shown through actual movement for multiple modular robots such as inchworm and butterfly motion.