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## Development of Hexapod Robot with Manoeuvrable Wheel

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### Abstract

*The necessity to utilize the usage of the robot cannot be denied since there are a lot of natural disasters occur everywhere around the world. The robot that can be used in this situation may be a remotely controlled by human or moves autonomously. Hexapod robot is one of the robots used in this situation because of its stability and flexibility during the motion on any type of surface. Hexapod robot is a robot that has six legs to walk or move. Since the robot has many legs, the robot is easily programmed to move around because it can be configured to many types of gait such as alternating tripod, quadruped and crawl. There are various designs of hexapod with certain function and advantages. In this research, a hexapod robot with manoeuvrable wheel is designed and developed. The purpose of the hexapod robot with manoeuvrable wheel is to ease the movement either on the flat surface or on the inclined surface. On the flat surface, the robot will move using the manoeuvrable wheel while on incline surface, the robot will climb using its legs. The decisions for the robot to use either wheel or legs are based on the sensory devices and algorithm develops at the controller attached to the robot.*

**Keywords:** Autonomous, Manoeuvrable Wheel, Programmable, Hexapod

### 1. Introduction

The study of this project is to develop a new hexapod robot which is quite different from the existing product in the market today. This project is mainly about a hexapod robot with manoeuvrable wheel which is a combination of six legs robot and mobile robot. Hexapod robot is one of most statically stable and posses a great flexibility while standing or moving due to its movement using six legs that can easily manipulated. Mostly, for every robot created will be biologically inspired from behaviour of animal or insect especially on their walking behaviour. For the hexapod robot, cockroach and the stick insect are the most commonly used and have been ethologically (scientific study of animal behaviour) and neurophysiologically (study of nervous system function) are extensively studied by other people previously. In contrary the wheeled mobile robot is a mechanical wheels vehicle which has capability to move around the ground using motorized wheels. These two types of robot are classified as mobile robot. Therefore, it will be great to produce new mobile robot that has variety of movement either walking using its legs or manoeuvre using wheels.

### 2. Literature review

This section will discuss about the journals and articles which are related to this project. The journals studied will cover the hexapod robots that have been previously developed by