

# Study on the Mobility of Service Robots

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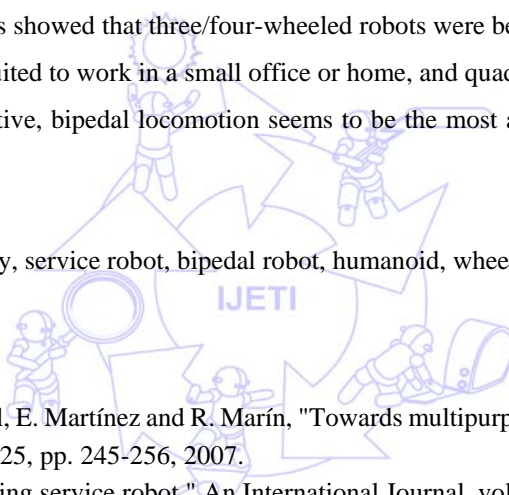
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## Abstract

The major characteristics of robots can be divided into several categories ranging from mobility to autonomy. The mobility of service robots is essential and fundamental to commercial and scientific progress. The rapid development of practical service robots depends on our decision which are the most efficient and affordable kinds of locomotion. The selection of the best locomotion, however, is not simple and easy, since the boundaries of robot working areas cannot always be defined clearly. This study emphasizes the usefulness of humanoid type service robots as general service robots, and concentrates on finding the most appropriate means of locomotion for a particular workspace. Several forms of robot locomotion were considered in three types of workspaces, and compared analytically. The results showed that three/four-wheeled robots were best suited to work in a large office or factory. Bipedal robots were suited to work in a small office or home, and quadruped robots were suited to work in outdoors. As a general alternative, bipedal locomotion seems to be the most adaptable form of locomotion for general service robots.

**Keywords:** mobile robot, mobility, service robot, bipedal robot, humanoid, wheeled robot

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