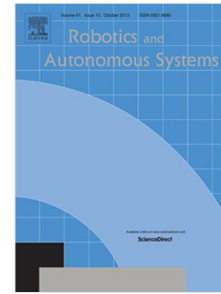


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Robotic delivery service in combined outdoor-indoor environments: technical analysis and user evaluation

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Abstract

Robotic solutions for delivery tasks in urban and unstructured areas have represented a solid and considerable field of research in recent years. The aim of the proposed paper is to present the technical feasibility and usability of a robotic solution able to carry items from outdoor areas up to the user's apartment and vice-versa. The proposed solution is based on three heterogeneous mobile platforms, working in three different environments (domestic, condominium, outdoor), able to cooperate among themselves and with other machines in the framework (i.e. the elevator of the condominium). The evaluation was performed in realistic environments involving 30 end-users.

Keywords: service robotics, cooperative robotics, delivery, user centered design

1. Introduction

In recent years, research progress in robotics has heavily driven the spread of robotic solutions in different fields of applications, including defense, rescue, security, healthcare, and agriculture. In particular, logistic applications have
5 been investigated thoroughly and have resulted relevant success cases such as the

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