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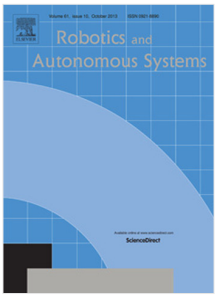


Urban robotics: Towards responsible innovations for our cities

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# Urban Robotics: Towards Responsible Innovations for Our Cities

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## Abstract

Emerging developments in robotics technologies combined with ambient intelligent infrastructures may radically improve the quality of life in cities. Urban robotics is a research area encompassing diverse applications for the urban environment. In particular, the term is used to refer to military, search and rescue and civil applications. In this article, we take into account civil applications. The article discusses the role of social desirability and responsibility in the design of robots and proposes a method for identifying the implications deriving from the interaction between the robot and the physical and non-physical properties of the urban environment. Among the issues discussed are: the phenomenon of vandalism, the rules of urban decorum, the social resistance towards technological displacement, and finally the new "soft" risks engendered by human-robot social interactions.

## Keywords

Urban robotics, ELSA analysis, Responsible Research and Innovations

## 1. Introduction

### 1.2. Towards social desirability

What is urban robotics? In the movie *I Robot* by Alex Proyas (2004) [1] humanoid robots take dogs out for a walk, deliver mails at home, collect garbage bags from the streets, and walk along crowded sidewalks. If we add a bit of reality and include in this science fictional scenario self-driving cars, drones and an ambient intelligence infrastructure – connecting robots, smart devices and people together – the picture of what urban robotics could be in the future should become clearer.

However, would that future city be the one in which we, citizens, researchers, engineers, entrepreneurs, policy makers, etc. wish to live and bequeath to next generations? Surely, the problem is not just about aesthetics, but also about ethics.

Social desirability has become a priority of Responsible Research and Innovation (RRI), the new ethical approach to scientific research and technological innovations that informs Horizon 2020,