A Review of Mobile Robots

Abstract

Humanoid robots, unmanned rovers, entertainment pets, drones, and so on are great examples of mobile robots. They can be distinguished from other robots by their ability to move autonomously, with enough intelligence to react and make decisions based on the perception they receive from the environment. Autonomous mobile robots are becoming more prominent because of their relevance and applications to the world today. Their ability to navigate an environment without needing physical or electro-mechanical guidance devices has made it more promising and valuable. Autonomous mobile robots are emerging in different sectors such as companies, industries, hospitals, institutions, agriculture, and homes to improve services and daily activities. Due to technological advancement, the demand for mobile robots has increased due to their tasks and services, such as carrying heavy objects, monitoring, searching and rescue missions, etc. Researchers have conducted various studies on mobile robots' importance, applications, and challenges. This paper aims to provide a global overview of mobile robots developed over the last decades. Mobile robots must have some source of input data, some way of decoding that input, and a way of taking actions (including their motion) to respond to a changing world. Sensing and adapting to an unknown environment requires a powerful cognition system. Nowadays, mobile robots can walk, run, jump, and so on like their biological counterparts. Several fields of robotics have arisen, such as wheeled mobile robots, legged robots, flying robots, robot vision, artificial intelligence, and so on, which involve different technological areas such as mechanics, electronics, and computer science. This article explores the world of mobile robots, including the new trends. Furthermore, these recent trends are applied to different fields such as medicine, health care, sports, ergonomics, industry, distribution of goods, and service robotics. These tendencies will keep going their evolution in the coming years.

Keywords

mobile robotics, navigation, perception, sensoring Mobile robot, Autonomous mobile robot, motion planning, Navigation, Autonomous mobile robot, sensor fusion, devices, estimation, and localization.