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Project 1 Robot Football Research

Common Applications of Autonomous Robots and Different Types of Light Following Robots

Autonomous robots are used in a variety of different fields, including many subsets of engineering. One of these fields is household cleaning, with the introduction of autonomous vacuum cleaners such as the iRobot Roomba®. According to Waypoint Robotics, the Roomba® is “easily the most prolific, truly autonomous robot on the market today” (Walker, J. 2019). This robot uses various types of sensors, such as cliff sensors, wall sensors, dirt sensors and wheel sensors to navigate the terrain that it has been set to clean. All of this works together to allow the robot to “see through sensors” (Ansaldo, M 2019) and achieve its goal completely autonomously. The cliff and wall sensors are of particular interest, due to the fact that they both use infrared signals to function. Cliff sensors consistently send out infrared signals to detect and avoid stairs, whereas wall sensors send infrared signals to detect walls to ensure that the floor can be cleaned as close to the wall as possible (Walker, J. 2019). “These sensors make the robot’s vision similar to the echolocation used by various animals, such as bats” (Harris, T. 2019).

Another sector in which autonomous robots are used is the military. One of the most prevalent types of robot is Unmanned Aerial Vehicles (UAVs), more commonly referred to as “drones” (Corrigan, F. 2019). One such example is the autonomous drone “Perdix”. These drones work as a team and “fly as a swarm, like a flock of crows” (Hess, P. 2017). They were developed at the Massachusetts Institute of Technology (MIT) Lincoln Labs, primarily to carry out tasks “too dangerous or difficult for humans” (Hess, P. 2019). One of the tasks that these drones were designed for is to patrol airspace to spot incoming aircraft and act accordingly. Elizabeth Quintana from the Royal United Services Institute says that “the system would probably be used for surveillance purposes in the near term” (Baraniuk, C. 2017).

Autonomous robots are now also being used in the medical sector, such as the “Hospi-R” autonomous delivery robot, used in Japanese hospitals. These robots use on-board equipment such as infrared sensors to autonomously navigate through the hospital to deliver items, such as patients medical records, medicine, etc. (Panasonic, 2015) They also use these sensors to avoid obstacles such as patients, to prevent them from causing someone injury. A benefit of these robots is that they do not rely on a pre-programmed route like many other autonomous robots, but they create a path using the information gathered from their sensors (New Atlas, 2013).

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