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Assignment-3

Two autonomous robots

Roomba robot:

Roomba is a series of autonomous robotic vacuum cleaners sold by iRobot. Introduced in September 2002, Roombas feature a set of sensors that enable them to navigate the floor area of a home and clean it. For instance, Roombas' sensors can detect the presence of obstacles, detect dirty spots on the floor, and sense steep drops to keep them from falling down stairs.

The Roomba units have a range of models which provide several different features, such as tangle-free brushes, separate sweep canister, a more powerful vacuum, obstacle avoidance, and performance maps displayed via a smartphone app. However, some parts of the Roomba models are interchangeable between related models, allowing a mix/match of features, or switching into other units for longer battery operation. Newer high-end models also feature a camera, which works in conjunction with onboard mapping and navigation software to systematically cover all floor area, move from room to room, and find recharging bases and beacons.

Additionally, some Roomba units can be adapted to perform other more creative tasks using an embedded computer in conjunction with the Roomba Open Interface.

RB Vulcano:

Mobile maRB-VULCANO is completely autonomous and collaborative, and can share workspace with people safely by means of its integrated lasers. In addition, it is a highly maneuverable platform thanks to its wheels with infinite rotation.
The robot RB-VULCANO consists of the mobile platform RB-VULCANO BASE, a lift column and a UR5 arm (payload of 5 kg), UR10 (payload 10 kg) or UR16 (payload 16 kg). By default, it has integrated collaborative gripper 40 CO-ACT (Schunk) but this can be replaced by any other type of tool (as a screwdriver, for example).
Meanwhile, the robotic arm can perform at different heights. The base of the robotic arm works between 750 mm and 1.500 mm. This allows to either reach objects that are at ground level and up to 3.000 mm high, in the case of RB-VULCANO 10.The tableboard allows to place objects weighing up to 300 kg. This can be used as a workbench, the mobile manipulator being stationary or in movement.
The robot can incorporate different magnetic navigation systems, SLAM or remotely through a PTZ camera.Other notable elements of the robot are its fairing, completely removable for easy maintenance and access to electronics; its battery easily interchangeable -with the possibility of acquiring a charging station with automatic exchange of battery- and easy integration of additional components in its interior.