

EENX15-21-31 Control, navigation and coordination of a fleet of waste handling robots

Background

The UNICORN project targets the important need of more sustainable and efficient domestic refuse handling. This will be done with a system involving autonomous collaborating refuse handling robots.

UNICORN will solve the problem of having large, and noisy, trucks in housing areas and instead utilize a system of small autonomous robots that continuously run around the housing area, collecting refuse from small refuse sorting cabinets outside each house, and moving it to a large central refuse station where the refuse is deposited in the correct bin. This leads to improved waste management that benefit ordinary people in ordinary living areas and promotes a sustainable future.



Problem description

The project goal is to develop a system for autonomous handling of household waste. The aim is to control and coordinate four UNICORN waste robots to be able to pick up and leave waste. The task includes both selection of sensors and development of an algorithm to operate the robots in order to navigate to specific positions and also coordinate the tasks between the different robots.

Suitable background: TKAUT, TKELT, TKMAS, TKDAT, TKDES

Group size: 3 to 6 students

Number of groups: 1–2

Prerequisites: Basics of Automatic Control, Mechatronic Systems, Programming in Matlab and C/C++

Contact person: Petter Falkman, tel. 031-7723723, e-mail: petter.falkman@chalmers.se