

## Graduation Assignment: Navigation for Agricultural Robots

Together with three pioneering Dutch companies, the Mechatronics Research Group of Saxion is working on agricultural robots. These robots will autonomously perform tasks on the fields, such as automatic weed removal. However, to perform these tasks, the robots must be able to navigate accurately between the crops.

Autonomous navigation on open fields is still a big challenge for these robots. There are different approaches to tackle this challenge. NVIDIA has developed the DRIVE framework for autonomous vehicles. NAV2 is the navigation package in ROS2. Autoware.AI and Autoware.Auto focuses on the automotive sector. In agriculture, RTK-GPS is often used for autonomy. There are research projects that use computer vision to detect rows of crops. The goal of this assignment is to decide what is a promising approach and to develop a prototype using that approach.



## Task description

In this assignment, you will explore multiple navigation techniques. Based on desk research, you will develop an advice on which approaches are most promising. One or more of these approaches are actually developed in a demonstrator. The demonstrator can be in simulation or on the physical robot.



From left to right: Weed Wacker/Odd.Bot, Robot One/PixelFarming, Trobotyx.

## Practical Information

**Student Profile:** Applied Computer Science, Computer Science (HBO-ICT), Electronics, Mechatronics (with interest in software aspects of robotics)

**Duration:** February 2021 – July 2020

**Compensation:** 230 euro per month, before taxes

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