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Content

This NewsLetter is dedicated the new visionary HortiBot project developing a robust and simple tool carrier for the outdoor gardener.

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HortiBot – A Plant Nursing Robot

The finished DaNet project ‘Autonomous Platforms and Information system for weed and crop monitoring’ and the ongoing DaNet project [Robotic Weeding](#) form a solid knowledge platform for an exiting new project where a commercial remote controlled Spider is combined with the AgroBot research platform from DIAS, Department of Agricultural Engineering. The Spider is a commercial radio controlled slope mower, produced by [Dvorak Machine Division in the Czech Republic](#). In Denmark there are two dealers www.Special-Maskiner.com and www.Svenningsens.dk



Vision

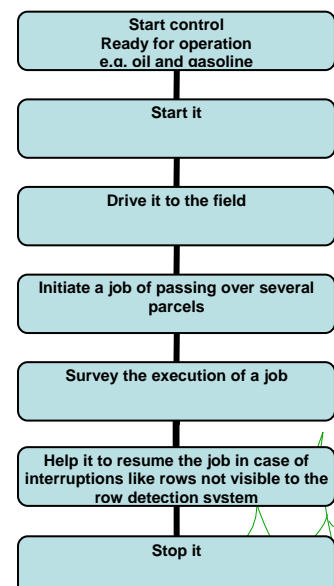
The vision is the Spider mounted with the HortiBot accessory kit, which transforms it into a tool carrier for high-tech plant nursing for e.g. organic grown vegetables. High-tech tools for weeding that at a later stage can be implemented are tools like laser, micro spraying and mechanical devices. The pictures show the commercial Spider and the delivery from this project – A robust and simple tool carrier for the outdoor gardener.

Background

Danish organic outdoor gardeners today use 50-300 hours per hectare for manual weeding. Through automatic regulation of an existing commercial machine this often heavy and cost-consuming weeding is phased out. At the same time a full-automatic registration will contribute to the efficient implementation of EU directive 178/2002 about traceability in the primary production and thereby enhance the food-safety in the production chain.

Main Project Deliverables:

1. The HortiBot is capable of passing over several parcels with visible rows autonomously based on a commercial row detection system from Eco-Dan with no use of Global Positioning Systems (GPS)
2. Unskilled workers will be able to operate the basic functions of the HortiBot within one hour of education and by use of a pictogram based operational guide. The basic functions of the HortiBot are as shown in the operational diagram to the right:
3. Report of operational analysis documenting the HortiBot concerning feasibility, operational capacity, and economy
4. All operational data is automatically send to an internet based database
5. The HortiBot kit is a real kit which can be mounted within a few hours and easily be removed again changing the Spider back to its original form.



Work packages

To achieve the goal of the project 4 work packages (WP) have been formulated with the following main deliverables:

WP1 Hardware Modules

All modules can easily be mounted and removed again from the Spider without having caused irreversible changes. Standard components are used if possible and tailored components are only a last resort.

WP2 User Interface

The everyday communication between operator and the HortiBot is simple and easy, and pictogram guides support the operator in the use of the HortiBot.

WP3 Software

The software is based on open source and open standard principles.

WP4 Operational analysis and interpretation

Report detailing the specified usage scenario and elaborating on the technical possibilities, operational constraints and customer demands in organic horticulture. Furthermore requirements specifications including a final quality function deployment matching customer requirements and engineering characteristics.

Partners

The project is coordinated by DIAS, Department of Agricultural Engineering, with expertise within technologies for precision weeding, robot technology for agricultural purposes, and machinery management. The additional partners in the project are the Engineering College of Vitus Bering with competences within hydraulics, electrical control, and software development; Special Maskiner with many years of experience within specialized machinery to nurse green areas; Eco-Dan a/s, which is the leading supplier of vision based solutions for automatic tool guidance within row crops; Gartneriet Inge-Marienlund which is the largest producer in Denmark of garden lettuce, china cabbage, and onions, which are grown according to organic principles.



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For more information on Robotics in agriculture take a look at the August NewsLetter from DaNet.

Topics of coming newsletters

European Research on ICT and Robotics in Agriculture and related Industries
Portraits of PhD students in the area of agricultural engineering and technology

