

# A software framework for agricultural robotics using ROS

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This talk will be about a generic software framework for development of agricultural robots which was developed for the EU FP7 project CROPS and extended for use in our current EU H2020 project Sweeper. The goal with this framework was to provide generic high-level functionality and to encourage distributed and structured programming, thus leading to faster and simplified development of robots using the framework. Different aspects of the framework will be described using different views of the underlying architecture. These views complement each other in a way that supports development and description of robot software.

The framework was constructed with a novel hybrid robot architecture that replaces the traditional planner with a static state machine that implements a flowchart describing each specific robot. The framework defines modules and main communication routes between modules. As primary tool for development, ROS (Robot Operating System) is used. ROS virtualizes the physical location of software modules such that modules can be moved between computers with minor changes in the system. The talk will include our experiences with ROS in general and this framework in particular for agricultural robotics.

**Bio:** Dr. Ola Ringdahl is a senior researcher in the [Intelligent Robotics group](#) at the Department of Computing Science, [Umeå University](#). He is currently working on the EU H2020 project [SWEEPER](#). The goal of this project is to develop a sweet pepper harvesting robot. He is responsible for the software development and integration in the project.

His research interests include autonomous navigation, automation in forestry, system integration, and software frameworks.

He did his [PhD thesis](#) in 2011 on autonomous navigation of forest machines. As seen in this [video](#), he was able to get a forest machine navigating through the forest on its own. More information about the project can be found on the [project's webpage](#).