gribot

Requirement for an open source agricultural robotics platform

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Table of Contents

Chapter 1. Introduction

We very often read articles or hear people speaking about precision farming and agriculture automation. However, we do have the feeling that, most of the time, agriculture automation projects mainly consists in improving the traditional way of doing things. As an example, the majority of farmers continue to use chemicals to control pests and weeds, and many of them continue to work huge areas of crops. These chemicals are not only expensive, but also toxic to our environment and our health.

Large areas of monoculture favour the development of diseases and the proliferation of insect pests, while reducing their predators. This way of working seriously damages biodiversity, the environment and the climate.

If we want to continue to live on our planet, preserve our environment and our health, we must quickly change the way we do things. However, changing our habits does not necessarily mean returning to the Middle Ages. We can use technology intelligently to help us in our change and ease our life.

That's why we decided to design an open source robotics platform, called *gribot*, that everyone should be able to build with a minimum of help. To this end, we publish all schemas, models and software completely free of charge under GNU General Public License. We believe that the free publication of our work will accelerate the diffusion of the robotic gribot platform and thus reduce the impact on the environment.

We are firmly convinced that the future of agriculture depends on a reduction in the size of farms, cultivated plots, an increase in the diversity of cultivated plants, a decrease in the number of head of livestock, a serious reduction in the consumption of non-renewable energy, etc.

The objective of the *gribot* platform is to help the farmer, not to replace him, in his daily tasks, such as mowing grass in crops, weeding small cultivated areas, planting, harvesting, and many other tasks that we have not yet thought of.

This project is very ambitious in many ways. For example, some activities that we would like to automate are still in the research stage or not even studied yet. Agriculture may not always be a very sexy subject, but it feeds the world's population and therefore deserves a project of this ambition.

Although our target is agriculture, the *gribot* platform is not exclusively limited to this market. Grass mowing, for example, involves many other activities such as roadside maintenance, grassy surfaces in industrial areas, etc. Any idea for using *gribot* is welcome.

What gribot means ?

Perhaps you've wondered what *gribot* means. It is not a fantastic animal from the imagination of J. K. Rowling and encountering Harry Potter.

We were looking for a short name and not yet used as a domain name. After some time of braistorming, cutting and mixing the words agriculture and robot, we found a**gri**culture ro**bot**, which gives gribot.

Project organization

The *gribot* initiative is built around a multicultural community of people motivated to improve our environment and to see this project succeed. All members of this community are passionate volunteers.

In the long run, we hope to be able to sell parts, kits and even complete robots to people who would not have the possibility to build everything themselves.

We will also consider collaborating with fablabs or collective workshops, in order to allow everyone to acquire a *gribot* robot.

Chapter 2. Requirement

As mentionned in the introduction, we would like to build a robotic platform, but what is a robotic platforme ?

For us, a platform represents a set of flexible robots, based on a common base, such as a common software, common electronics, standard tool holders, standards parts, etc. The gribot platform could, for example, allow the creation of a small mower robot, as well as a high clearance robot to work on mounds of crops.

This means that, in the long term, there will not be just one robot, but a family that, we hope, will allow great flexibility in working in agriculture.

In a first step, we will focus on a mower robot, allowing the maintenance of the grass in the crops, because it is a need that we quickly identified. However, as more needs are identified, or ideas emerge, we will document these needs.

Chapter 3. Mowing

As mentioned above, the mower robot will be the first element of the gribot robotic platform.