IDPs (m/f/d)





Robotics start-up is looking for **students** enthusiastic about innovative, herbicide-free and **automated solutions for weed control** in grassland (full or part-time).

What we offer

- Participation in agricultural robotics projects (e.g. in the domains of navigation, human-machine interaction, CAD or PCB design)
- Individual supervisor for your area of specialization
- Startup feeling: lots of team activities and flat hierarchies
- Possibility of permanent employment
- Bonus payment upon successful completion

Open positions

Software		
٠	Autonomy and perception	(p. 2)
•	Real-time fleet supervision notifications	(p. 2)
•	Keypoint extraction from drone images	(p. 3)

Other

• If you have other ideas, don't hesitate to contact us. We're always open for interesting suggestions!

Autonomy and perception

As we advance with our robot's autonomous navigation capabilities, our operating domain expands from empty fields to fields with obstacles. These include static objects such as tree trunks, fences and stones, as well as dynamic obstacles such as people and livestock. To allow the operation of our robots in these situations, we wish to integrate visual sensors that aid in our path planning.

Your profile:

Computer science, robotics or electrical engineer Experience with:

- ROS (our products use ROS2 Humble). Experience with the Nav2 stack is a plus.
- Embedded computers and Linux.
- Visual sensors such as RGB cameras, depth cameras and/or LIDAR.

Your tasks:

- Research on regulations regarding autonomous agricultural vehicles in the EU (e.g. ISO 18497).
- Select and test different sensors in the lab and on the field.
- Integrate perception solutions into our robot's behavior tree using the Nav2 library.

Lucas Alvarez Navigation & Localization lucas.alvarez@paltech-robotics.eu

Real-time fleet supervision notifications

Autonomous operation is one of the main goals we want to achieve with our robots. Therefore, long distance supervision of the operation of our robots is required. To achieve this, our fleet must be able to send real-time notifications of each robot's operating status: state of charge, in-route obstacles, state of the motors, among others.

Your profile:

- Computer science engineer or similar coursework.
- Experience with REST APIs.
- Experience with cloud deployment is a plus.

Your tasks:

- Develop a definition system for creating new notifications without technical expertise.
- Create a module for generating notifications with our fleet management software.
- Write integrations for SMS and Telegram.

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Keypoint extraction from drone images

One of our main objectives is that our robots are autonomous and can move in the terrain in an optimal way. For this it is essential to have a map of the terrain. In order to obtain this map, we have drones that capture images of the terrain, which must be joined to reconstruct the map. It is essential that this reconstruction of the map is as fast as possible, since without this map it is not possible to start the operation of the robots.

Your profile:

- Experience in computer vision and image processing.
- Experience in python programming.

Your tasks:

- Literature review to find what is the state of the art in the industry.
- Develop an image stitching algorithm with images overlapping by no more than 40% and having GPS information.
- Optimize the algorithm to achieve the required efficiency.
- Capture new images using drones.

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