Service ID

S00212

Location

At user's premises, France

Testing and evaluation of mobility algorithms with ground robot

Provider service

National Institute for Research in Digital Science and Technology - INRIA

Link to content

https://agrifoodtef.eu/services/testing-and-evaluation-mobility-algorithms-ground-robot

Type of Sector

Arable farming, Food processing, Greenhouse, Horticulture, Tree Crops, Viticulture

Accepted type of products

Data, Design / Documentation, Physical system, Software or AI model, Other

Type of service

AI model training, Collection of test data, Data analysis, Desk assessment, People training, Performance evaluation, Provision

Description

The sophia infrastructure offers the possibility to test and evaluate the mobility algorithms embedded on a ground robot. Mobility Algorithms concerns the classical robotics functionalities of Mapping, Localization, SLAM, and Navigation. The ground robot is equipped with an array of sensors, including Camera, LiDAR, IMU, and RTK-GPS (for the ground truth evaluation). The service consists of three main steps:First of all, the algorithm is evaluated using representative datasets. After that, the algorithm is integrated in a ROS2 architecture and evaluated with the local agrifoodTEF test infrastructure (different areas are possible). The performance of different attributes of the algorithm is evaluated with quantitative and qualitative metrics. A possibility of benchmarking will be proposed as a complementary option in order to position the performance of the proposed algorithm regarding the current state of the art. Finally, the last step will be to perform the field testing in real condition and in a particular end-user or customer site using the mobile living lab (it consists of a mobile laboratory going to the field connected with the real robot for monitoring and evaluation purposes).

How can the service help you

Through this service, customers can test and evaluate their AI & Robotic solutions in robot mobility for agricultural and agrifood applications to see how far are they from the SoA solutions. With the results obtained from this service, they would be able to check how much reliable their solution is, and identify where the existing limitations are.

How the service will be delivered

There might be need of repetitions to deliver this service depending on the customer request or anomaly in the execution. The delivery of service could be constrained due the season of crop or vegetation for which this service would be requested. Moreover, depending on the customer needs, customization and location, it could take from weeks to 2-3 months to test and evaluate the mobility algorithm. The customer will receive a document with the analysis of test and evaluation, and potentially a comparison with the solution available in SoA.

Service customisation

The equipment along with facilities, and environment used in the service could be customized using specific sensors as per customer need. Additionally, there may be some technical limitations of the robot, and legal regulations need to be considered.