Service ID S00069

Location France

ARPA 2 - Qualification of perception systems in harsh environmental cor

Provider service

INRAE

Link to content

https://www.agrifoodtef.eu/services/arpa-2-qualification-perception-systems-harsh-environmental-conditions-rain-fog-night

Type of Sector

Arable farming, Greenhouse, Horticulture, Livestock farming, Tree Crops, Viticulture

Accepted type of products

Design / Documentation, Physical system, Other

Type of service

Collection of test data, Performance evaluation, Provision of datasets, Test design, Test execution, Test setup

Description

This service tests the performance of on-board detection systems in agricultural robots, focusing on their safety functions under challenging environmental conditions like fog and rain. Conducted at the PAVIN platform in Clermont-Ferrand, France, the tests evaluate sensor accuracy and response, identifying any false negatives or positives. A manufacturer's representative must be present to configure the system and ensure proper operation during testing.

How can the service help you

This service addresses the need to test and validate the performance of detection systems used in agricultural robots, specifically under challenging environmental conditions like rain, fog, and night, reducing the risk of accidents in the field.

Before the service, the customer has a robot or detection system but lacks critical information about how well it runs in such challenging environments, especially regarding safety. After the service, the customer receives a detailed report showing how accurately the system detects obstacles and whether it triggers the necessary safety signals under various conditions.

The test identifies issues like missed detections or false alarms, ensuring the robot can perform safely in adverse weather scenarios. The final test report is produced and reviewed by the test operator.

How the service will be delivered

The ARPA2 test can be customised to focus on specific safety features manufacturers wish to evaluate. These features are jointly established before testing. However, the tests specifically determine the detection system's accuracy and safety under harsh conditions.

Some limitations exist, such as the need for a manufacturer's technical representative to be present during the test and the requirement to provide technical manuals in advance.

Service customisation

Testing is available year-round, with possible restrictions related to service demand. The test lasts approximately three days, depending on the conditions established during the technical meeting. The service involves testing the detection system or robot in a controlled environment at the "PAVIN Fog & Rain" platform in CEREMA, Clermont-Ferrand (France). Tests are conducted in static positions under varying rain and fog conditions, observing for safety-critical issues like missed detections or false alarms.

Customers will receive a detailed test report outlining the system's performance. The robot's technical and user manuals must be submitted in advance. The manufacturer's representative will oversee the process and ensure the system performs as expected during the test.

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