Preparation of computational test environment

Provider service

Politecnico di Milano (POLIMI)

Link to content

https://www.agrifoodtef.eu/services/preparation-computational-test-environment

Type of Sector

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

Accepted type of products

Design / Documentation

Type of service

Test setup

Description

To successfully conduct a digital testing campaign, preparatory activities are usually required to set up the computational environment used for testing. This service performs activities such as: - setting up the hardware resources needed to run the tests - configuring and initialising the virtual environments used for testing (e.g., Docker images, private "data rooms" for safe data sharing) - installation and configuration of required software packages and dependencies - Setting up authentication layers, user roles and credentials as needed- Migration and/or exchange of required data and ground truth annotations - installation and configuration of a simulator - importing and configuring a previously defined simulated environment - executing dry runs to check that all elements of the test environment operate as required Environment preparation is done according to an environment design provided by the customer. If needed, such design can be done by AgrifoodTEF for the customer via Service S00176. Interested customers can get support from AgrifoodTEF for the entire pipeline involved in digital testing, from the design of its other elements beside the environment (namely, the testing protocol via service S00177 and the evaluation metrics via service S00178) to test execution (service S00182) and data collection (service S00183) and evaluation (S00184). Support in interconnecting the systems under test to the digital testing environment, if needed, is available via service S00181.

How can the service help you

Setting up a computational test environment to test AI- or robotics-related systems in a meaningful way is not an easy task. Even companies that possess advanced internal competencies concerning the design and implementation of such systems may encounter difficulties in setting up the proper digital testing environment needed to validate their systems and gauge their performance.

This service allows the AgrifoodTEF customer to benefit from a tailor-made digital environment with secured and adequate digital resources prepared by experts, leveraging AgrifoodTEF's expertise and infrastructure. This environment can then be exploited as a starting point to implement digital testing.

How the service will be delivered

This service description is intentionally generic. Every instance of this service is, in fact, customised to adapt it to the needs and requirements of the specific customer.

The following is an example of a service instance.

Example service: In the context of testing the capability of a computer vision model to discriminate weeds from crops, a given testing protocol must be followed to benchmark the performance of different systems on different reference datasets with respect to a set of evaluation metrics. Actual execution of the testing protocol to generate the data required by the metrics requires a computational environment compliant with suitable specifications (e.g., defined via service S00176).

The customer requires that AgrifoodTEF manages – via this service – the preparation of such an environment. Accordingly, as a prerequisite to executing the tests in compliance with the protocol, we will configure a virtual environment that: i) hosts all data required for testing, including the ground truth annotations used for the evaluation, ii) already includes the required libraries and package dependencies for running AI models out of the box, and iii) is accessible only by the customer's designated team and by authorised personnel from our team via secure authentication.

Service customisation

The first phase of execution of this service involves discussing with the customer the specific details of the design (provided by the customer) of the digital environment to be set up.

During this phase, the service providers will define – together with the customer – the hardware and software infrastructure required to prepare the environment, as well as the activities required by the preparation.The output of this initial phase (which may take 1-3 weeks and proceeds via meetings, either in person or remote) is a plan of activities, including also the definition of when the completed environment will be ready for use.

The final output of the service will be the digital testing environment itself, built on AgrifoodTEF's digital infrastructure and complete with documentation about how to interact with it. On request, infrastructure elements provided by the customer (e.g., HPC servers) can be leveraged for parts of the environment. The digital environment is provided ready for the execution of the tests by the customer; if required, the customer can ask AgrifoodTEF to support such execution via services S00181 (Support in interconnecting system under test to AgrifoodTEF's computational infrastructure) and/or S00182 (Execution of digital testing).