

Service ID S00387

Location France



Evaluation of AI Camera Perception Systems

Provider service

INRAE

Link to content

<https://agrifoodtef.eu/catalogue-of-services/evaluation-ai-camera-perception-systems>

Type of Sector

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

Accepted type of products

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

Type of service

AI model training, Performance evaluation, Test design, Test execution, Test setup

Description

The Evaluation of AI Camera Perception Systems service offers a holistic approach to test AI-based monocular RGB camera perception systems. It provides the following tasks: Record and annotate RGB images by the operational domain (vineyard, orchard, or other crop); create relevant (for your application) datasets covering a large number of scenarios (variation in parameters concerning the vegetation, the meteorological conditions, and humans' position and posture in the scene); evaluate the systems (hardware or software/algorithm) to datasets and analyse responses. This service provides a complete solution for developing, refining, and evaluating perception systems based on cameras using AI algorithms in agricultural and other operational environments.

How can the service help you

This service can significantly enhance the development, testing, and evaluation of AI-based monocular RGB camera perception systems by creating tailor-made datasets and annotated pictures, submitting them to your systems (hardware or software link), and analysing responses to create a detailed evaluation report. It helps developers and agricultural professionals create robust, accurate, and reliable AI systems by statistically characterising their behaviour. Each dataset image is based on the original context of each primal picture. The generated pictures will be customised following specifications on variations in vegetation (type, height, maturity, etc.), as well as on the meteorological conditions and obstacle characteristics, such as human posture, body type, and body shape. The variation in parameters concerning the vegetation, the meteorological conditions, and the attributes of obstacles and humans allows for covering a large number of scenarios that create relevant datasets. These are important for training and validating AI algorithms, improving their accuracy and reliability in various agricultural contexts. With this kind of characterisation, developers can analyse the behaviour of AI systems under different conditions, ensuring robust performance and adaptability. This approach ensures that monocular RGB perception AI systems are tested with a dataset that simulates various agricultural operational scenarios.

How the service will be delivered

The evaluation of the AI camera perception service is highly customisable. Clients can specify the operational domain, such as picture characteristics (resolution) and system specifications (physical and protocol link to the camera for hardware solution and input format for software solution to test), for evaluation, ensuring that the services meet their unique testing needs. The service can be tailored to various operational domains and scene scenarios.

Service customisation

The service delivers a range of testing and evaluation capabilities through dedicated platforms and interfaces. The Agricultural Field Data Acquisition service captures image data streams using specified sensors and machinery. The AI Camera Perception System Image Generation and Annotation service generates and annotates images according to specific environmental and system operational specifications. The AI Camera Perception System Evaluation service submits AI systems to known datasets and evaluates their behaviour, providing precise, comprehensive evaluation reports. These services can be customised and tailored to be consistent with the operational domain of each client's system.