

Service ID S00389

Location Netherlands, Remote



Scanning as a Service for synthetic data generation and modelling

Provider service

Wageningen University WUR

Link to content

<https://agrifoodtef.eu/catalogue-of-services/scanning-service-synthetic-data-generation-and-modelling>

Type of Sector

Arable farming, Food processing, Greenhouse, Horticulture

Accepted type of products

Other

Type of service

Collection of test data, Provision of datasets

Description

We offer a comprehensive 3D scanning and model preparation service tailored for agriculture and food applications, built on expertise developed through scanning diverse objects such as rapeseed plants, tomato seedlings, and fish. This service transforms real-world items into accurate, high-resolution 3D models, ready for use in synthetic data generation, robotics simulations, and plant phenotyping. Using tested scanning approaches—including photogrammetry with stationary or rotating cameras, DSLR, and smartphone captures—we can reliably acquire detailed image sets. Using these 3D models, your AI detection algorithms can be tested on high-quality 3D data. The data can be used to test detection algorithms, or it can be used in complete virtual environments to test robotic applications. Beyond static models, dynamic functionality can be added by assigning physics properties and enabling randomisation—altering geometry, texture, and patterns to expand dataset diversity. This allows models to be seamlessly integrated into simulation environments for testing AI, testing robotic systems, or conducting virtual experiments to test and improve the systems. Whether for research, product development, or automation, our solution delivers a scalable, future-ready platform for realistic and adaptable 3D tests.

How can the service help you

The service fulfils several customer needs and solves key problems in the agriculture and food sectors:

Customer needs fulfilled:

- Accurate digital representation of agricultural and food products for testing and validation to improve the reliability of detection or control of robots.
- Fast, consistent, and scalable 3D model creation without requiring in-house 3D scanning expertise.
- Synthetic data generation for testing or retraining of AI systems when real-world data is scarce, expensive, or impractical to collect.

Problems it solves:

- Eliminates the time-consuming and error-prone manual process of turning images into usable 3D models.
- Reduces costs and delays associated with acquiring large, varied datasets in the field or lab.

How the service will be delivered

The fixation of the photogrammetry setup can be customised to need. Depending on the object, modifications will take place to fix the product to ensure good scanning options.

Service customisation

This service could be delivered through different options, depending on the customer's preferences. Either the customer provides the products that need to be scanned, or we take care of the products.

- The customer ships or delivers the physical items (e.g., plants, seeds, produce, fish) to our facility.
- We perform the scanning, processing, and model preparation in-house.
- Finished 3D models are delivered digitally via secure download, along with any requested synthetic variations and simulation-ready formats. The available file formats are
 - Unreal Engine in .fbx
 - IsaacSim in .usd
 - Combination of .obj (geometry) and .mtl (material)
 - Textures in .png

Alternatively, we arrange for local scanning using the mobile photogrammetry setup, coordinated by our team.