Service ID S00355

Location Denmark

Provision/generation of synthetic datasets for robust deep learning mode

Provider service

Danish Technological Institute (DTI)

Link to content

https://agrifoodtef.eu/catalogue-of-services/provisiongeneration-synthetic-datasets-robust-deep-learning-models-farming

Type of Sector

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

Accepted type of products

Data

Type of service

Collection of test data, Data analysis, Data augmentation, Provision of datasets

Description

DTI's synthetic dataset generation service enables agri-tech companies to develop more reliable and scalable deep learning (DL) models for farming applications. By simulating diverse farming scenarios, including rare or hard-to-capture conditions such as extreme weather, pest infestations, and various crop growth stages, DTI addresses critical challenges like data scarcity and class imbalance. Additionally, DTI augments real-world datasets by introducing artificial variations in lighting, angles, and occlusions, closely mimicking real-world environmental factors. This service empowers DL models to generalise better, handle edge cases effectively, and perform robustly under practical farming conditions, ultimately supporting agri-tech innovation and scalability.

How can the service help you

DTI's service helps agri-tech companies overcome the challenges of limited or imbalanced datasets by generating synthetic data that enhances the robustness and generalisability of deep learning models. Before using this service, customers might struggle with DL models that fail under rare scenarios or environmental variability. After using the service, customers will have access to enriched datasets that allow their models to perform reliably under diverse farming conditions, ensuring scalability and better practical applicability.

How the service will be delivered

Our dataset service is highly customisable. Customers can specify data types (e.g., images, sensor data), data collection methods (manual or automated), and target applications. Customers should inform us in advance of any special conditions or requirements.

Service customisation

The service includes the generation of synthetic datasets tailored to customer needs. The datasets will be created based on the customer's requirements, including specific farming scenarios or environmental conditions. Delivery logistics include close collaboration with the customer to define the desired data characteristics, followed by the execution of simulations. The service can be delivered remotely. The output includes the synthetic datasets and a detailed report documenting the dataset characteristics and methodology.