General Purpose Datasets with Multisensored Aerial Robots

We utilize aerial robots (drones) to gather general-purpose data and create both raw and post-processed datasets tailored to customer needs in agricultural applications. These datasets are essential for the development and evaluation of AI & Robotics algorithms encompassing, but not limited to, weed detection, crop health assessment, growth and maturity monitoring, feeding decision support systems (DSS), and navigation. Our services cater to various agricultural sectors, including arable farming, horticulture, food processing, viticulture, and arboriculture.

Our Services

Data Acquisition

Sensors Data Sources

- Capture detailed aerial images, with high-resolution Cameras (Resolution 1280x1024, 60fps).
- Capture 3D point clouds with LiDAR (RS Helios 5515)
- Capture multispectral images with Multispectral Cameras (Silios Toucan, & CMS4)
  - Toucan Spectral Range: 400-900 nm – 10 bands
  - CMS4: 550 – 830 nm – 8 + 1 B&W bands
- Capture data with User Specific sensors

Environment Mapping

- **RTK-GPS** to capture GPS coordinates for accurate spatial mapping of fields, assets, and environmental features.
- **IMU sensor** for precise drone positioning and orientation, ensuring stable flight and accurate data capture in varying environmental conditions.

Data Augmentation

Georeferencing

Precision from Centimeter Level, Precise Positioning, Spatial Alignment, Enhanced Reliability

Data Processing

- **Data Synchronization**

Consistent Timestamps, Precise Timing, Data Logging, Quality Assurance

- **Data Cleaning**

Noise Removal, Outlier Removal

- **Data Interpolation/Extrapolation**

Fixing Missing Data, Estimating New Data

- **Data Merging/Fusion**

Combining bands from multispectral camera

Data Annotation

Labeling, Semantization

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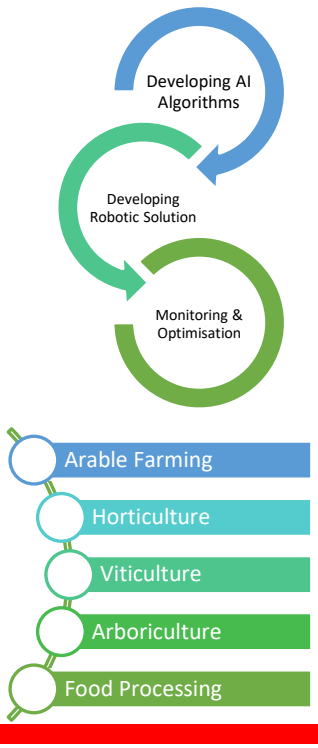
Potential Usage and Application in AI and Robotics

Usage: For What?



Application Areas

Feeding Decision Support Systems (DSS) for various application

MicroServices List

- Definition of Dataset Structure
- Implementation of Dataset Structure
- Sensor Integration and Calibration
- Logistics for Data Acquisition
- Data Acquisition Execution
- Data Validation
- Data Augmentation
- Data Anonymization
- Specific Tools for Data Visualization and Exploitation
- Reporting

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