ROBOVISION AI PRODUCT SHEET

The Robovision AI framework is a collection of interconnected components that allows easy integration and deployment of deep learning algorithms into a generic process flow. With this software, we want to give organizations a rapid time to market for a new generation of computer vision. Robovision AI handles the complete back end of the deep learning pipeline, with an SDK that provides data scientists and engineers a way to integrate their best work in the framework that makes it scale by putting it in the hands of non-experts. As such, our unique approach combines flexibility and accessibility in one scalable application. The internal deep learning model structure is built to allow for an easy migration to embedded systems in later stages. Robovision AI is based on Docker technology which makes it portable to any system running a Linux or Windows operating system. An advanced annotation tool integrated in the technological stack contains both predictive labeling and user management for large labeling crowds. As such, there is no limit to your industrial deep learning challenge.

ROBOVISION AI MODULES

2D labeling tool
Set of tools to delineate what your AI needs to learn in your images

3D labeling tool
Set of extensive tools for both images and 3D point cloud labeling

Multiview labeling tool
Integrated multiview labeling tool with the supported data loader and multiview image classification layout

DICOM labeling tool
Advanced tool for labeling a 3D render of the DICOM file and three orthogonal slices.

Data management
Robust data management allowing labeling without committing to a pipeline layout

User management
Comprehensive way to manage platform users and their permissions

Pipeline management
Clear step-by-step pipeline management, a vast range of pipeline layouts, and more

Global settings
Platform-wide settings of attributes and classes to promote reusability and speed up work

Deployment management
Ability to manage deployments of different types

Export/import
Packaging functionality allowing quick export and import

AI store
Full-fledged way to exchange free and billable pipelines

Dashboarding application
Deployments visualization based on real-time data

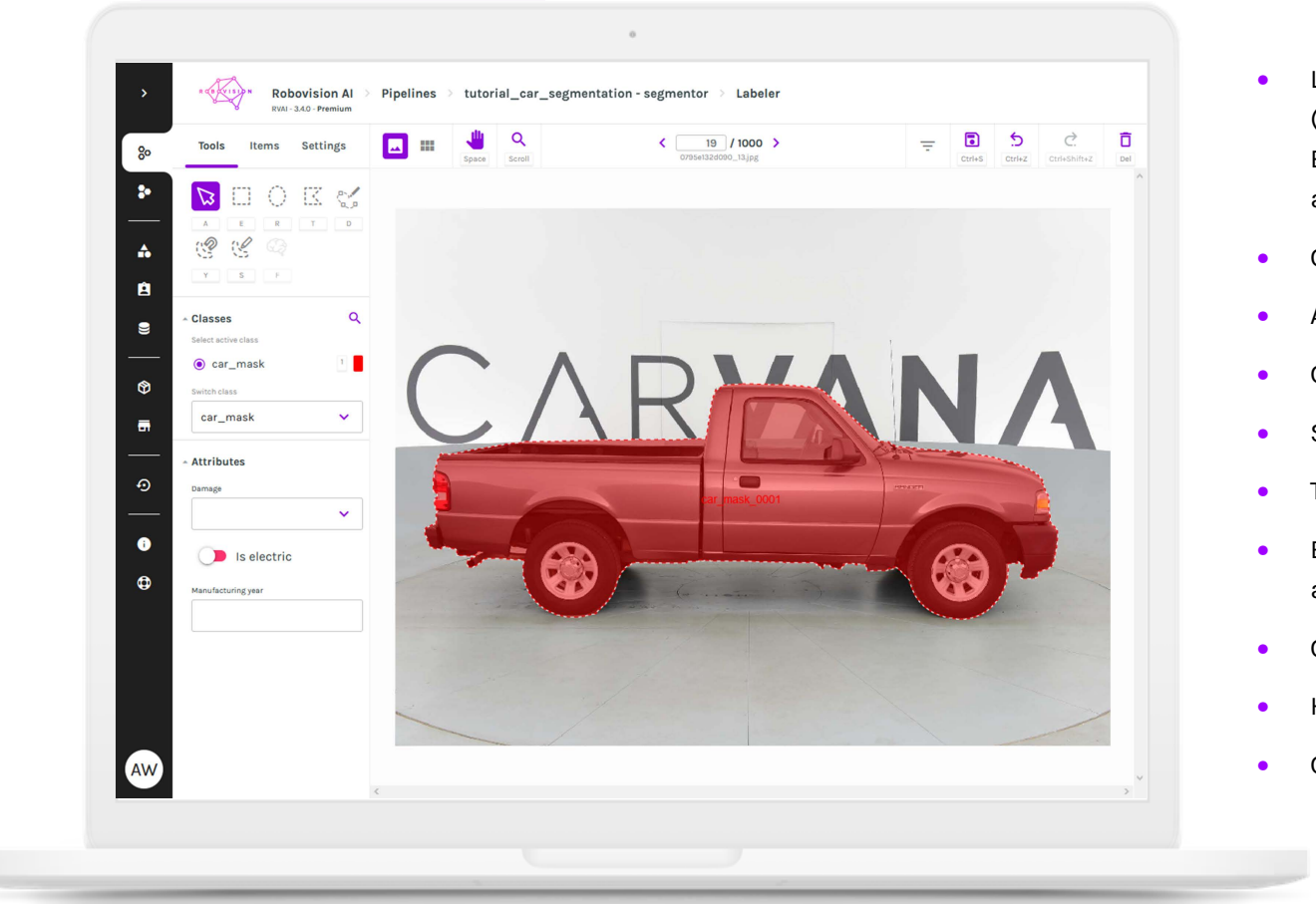
Robovision AI SDK
Python tool for data scientists to standardize the implementation of algorithms

License management
Stand-alone licensing tool allowing our customers to generate licensing files

OEM & i18n support
Easy customization to maintain customers' corporate identity

ROBOVISION AI MODULE

2D LABELING TOOL

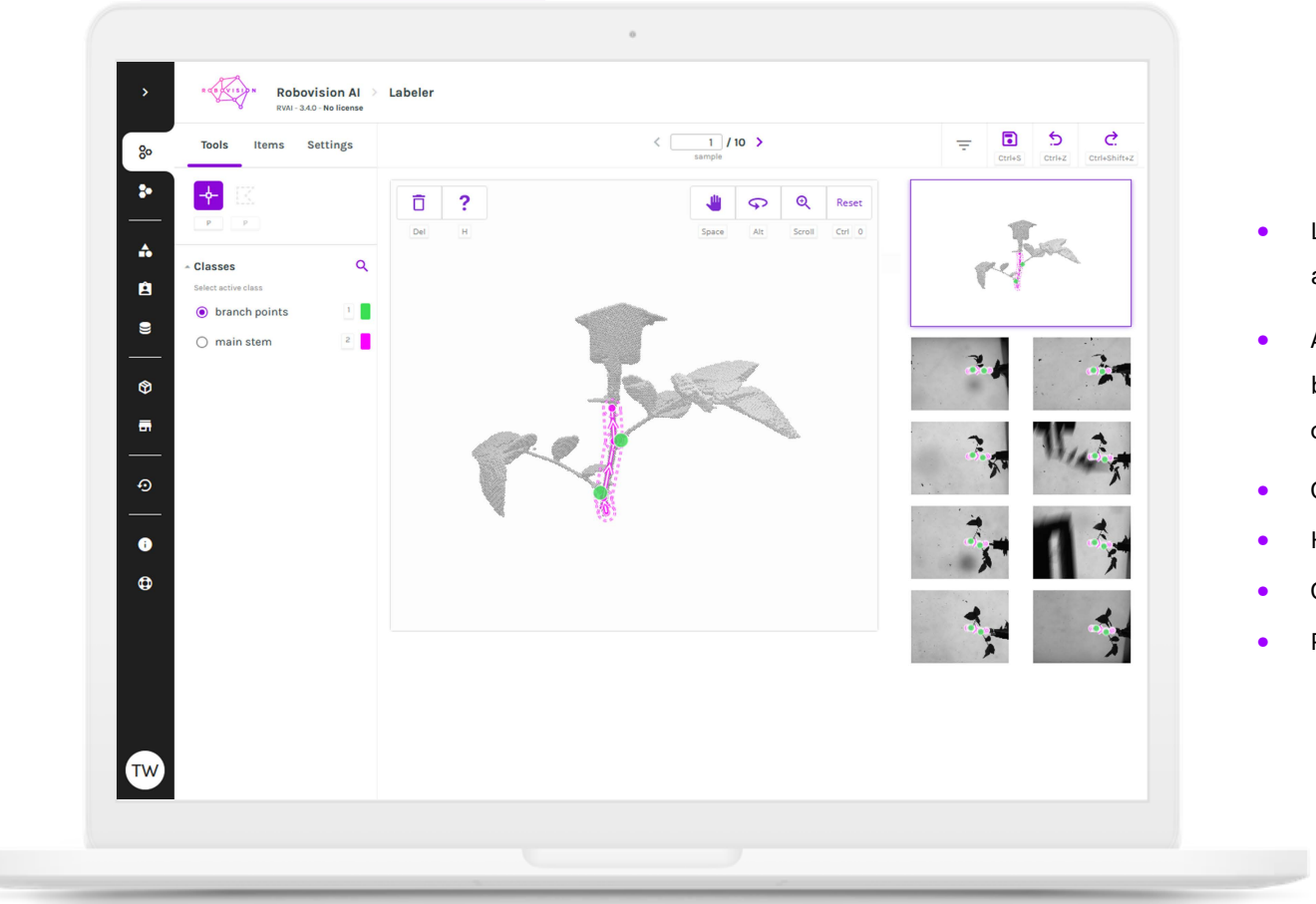


FEATURES

- Labeling tools to create and edit annotations (Box, Ellipse, Polygon, Lasso, Magnetic lasso, Brush, Grab cut, Predictive labeling, and Select tools) and manipulate scene (Pan and Zoom tools).
- Classes for denoting pre-defined types of annotations.
- Attributes to add extra data to annotations.
- Crowd labeling and predictive labeling functionalities.
- Separate quality control interface for annotation review.
- Two sample views (single and thumbnails).
- Enhanced sample sorting and filtering by metadata and annotation classes.
- Confusion matrix to compare labelers' annotations.
- Hotkeys to speed up your work with the labeling tools.
- Comprehensive workspace settings.

ROBOVISION AI MODULE

3D LABELING TOOL

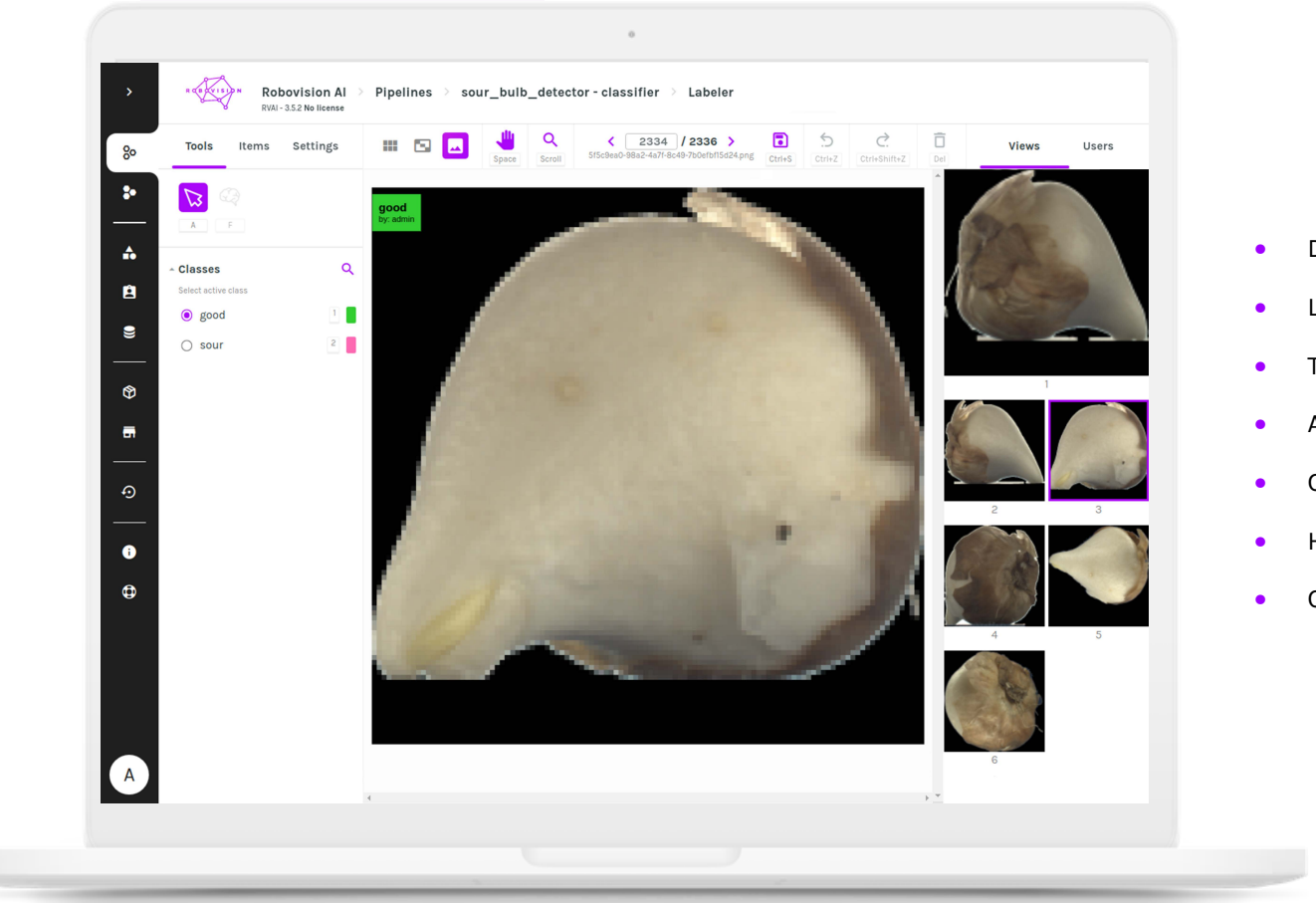


FEATURES

- Labeling tools to create and edit 3D annotations and manipulate scene.
- AI-based model inferring where items are located both on the images and the reconstructed 3D point cloud.
- Classes for denoting pre-defined types of annotations.
- Hotkeys to speed up your work with the labeling tools.
- Comprehensive workspace settings.
- Pre-trained models for a quick start.

ROBOVISION AI MODULE

MULTIVIEW LABELING TOOL

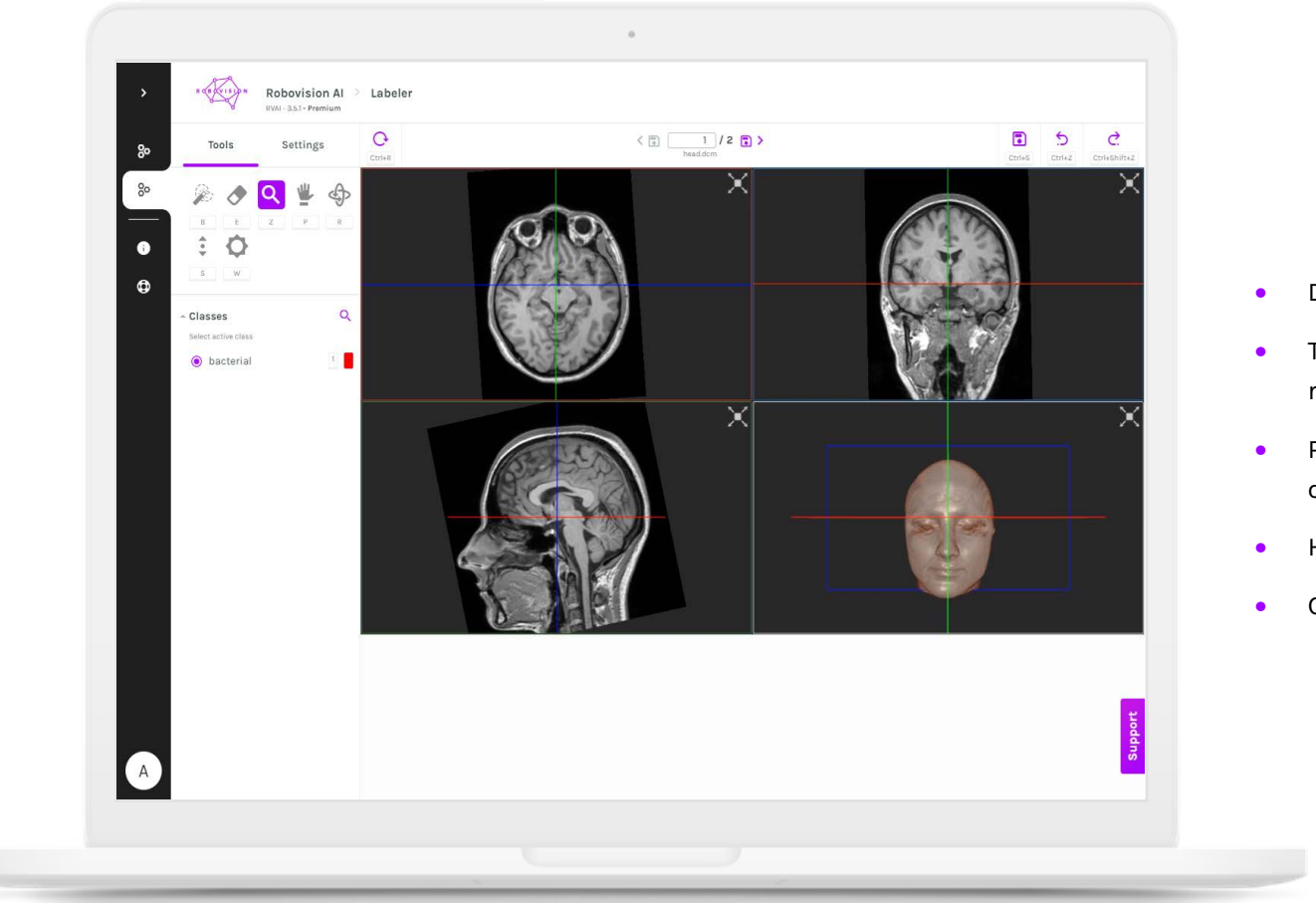


FEATURES

- Data loader supporting multiview images import.
- Labeling tools for annotating multiview images.
- Two sample views (single and thumbnails).
- Ability to filter images by views.
- Confusion matrix to compare labelers' annotations.
- Hotkeys to speed up your work with the labeling tools.
- Comprehensive workspace settings.

ROBOVISION AI MODULE

DICOM LABELING TOOL

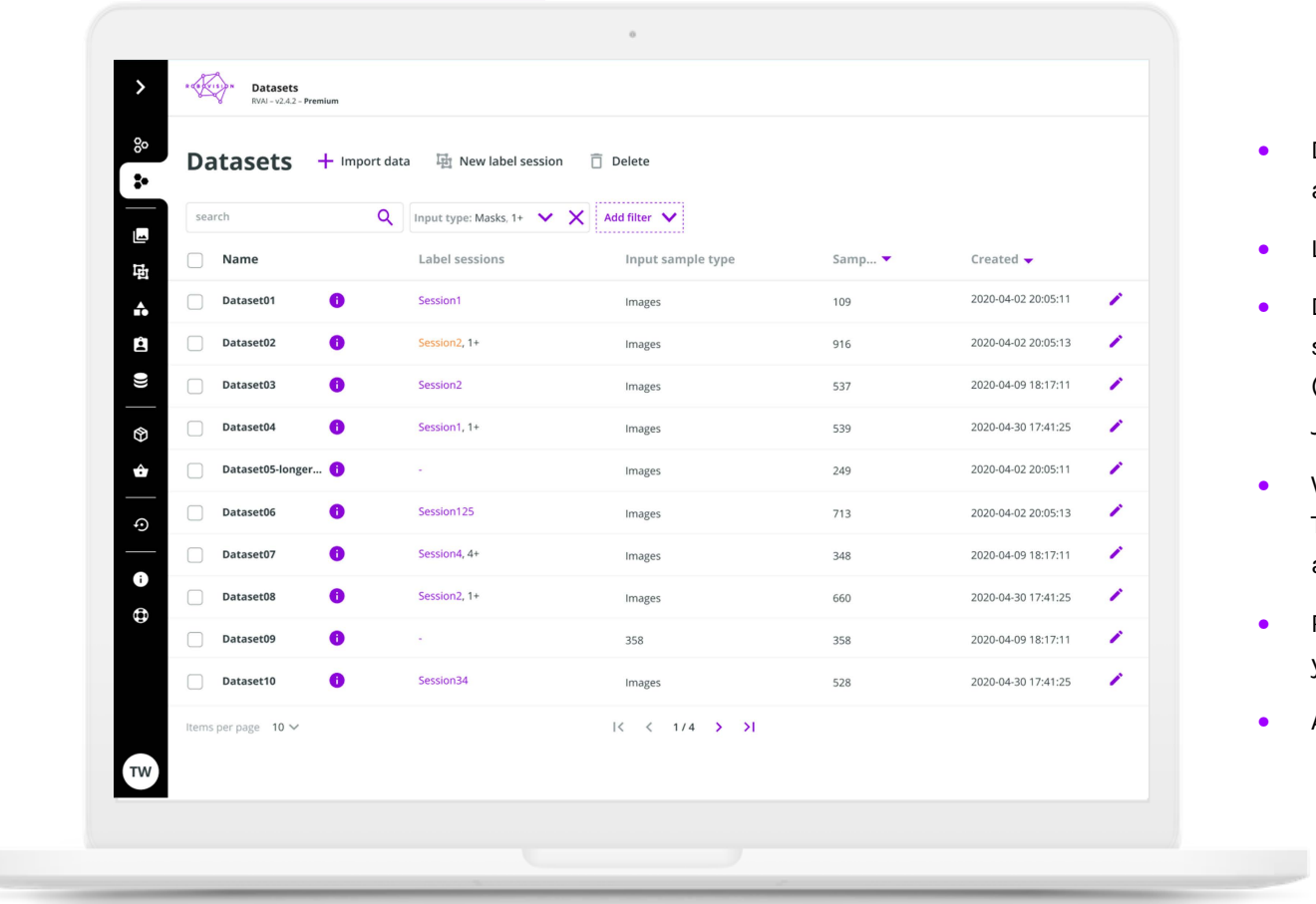


FEATURES

- Data loader supporting DICOM import.
- Tools for labeling and changing the slices and 3D render view.
- Preview of a 3D render of the DICOM file and three orthogonal slices.
- Hotkeys to speed up your work with the labeling tools.
- Comprehensive workspace settings.

ROBOVISION AI MODULE

DATA MANAGEMENT

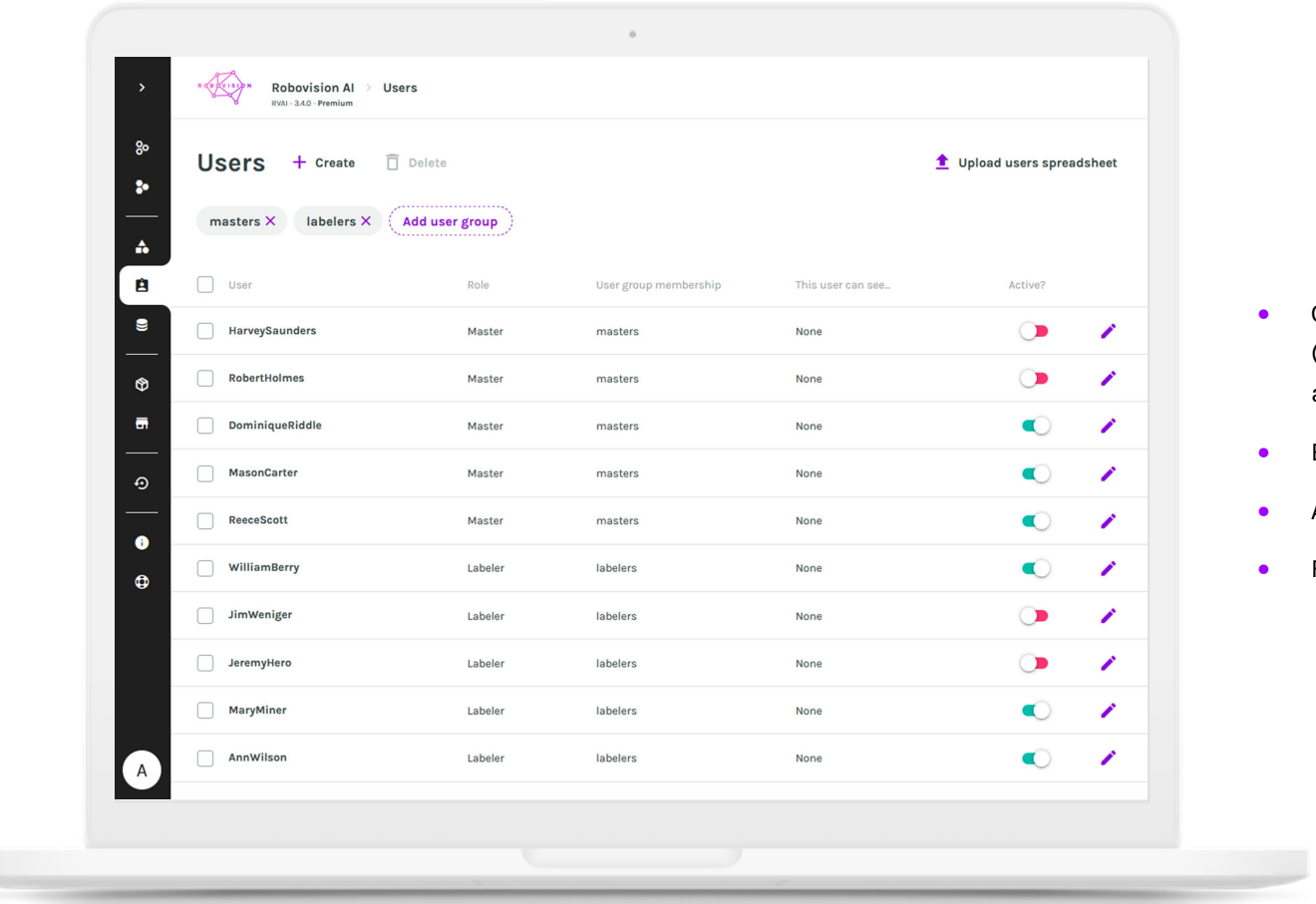


FEATURES

- Datasets that enable sharing images and annotations across pipelines.
- Labeling without committing to a pipeline layout.
- Data loader enables you to import any input sample supported by Robovision AI and related annotations (labels, masks, bounding boxes, etc.) with the help of JSON files.
- Wide range of image types supported (JPEG, JPG, PNG, TIFF, BMP, GIF, including a 4th transparency channel), and DICOMs.
- Renewed file browser for uploading and managing your files.
- Advanced S3 folders configuration.

ROBOVISION AI MODULE

USER MANAGEMENT

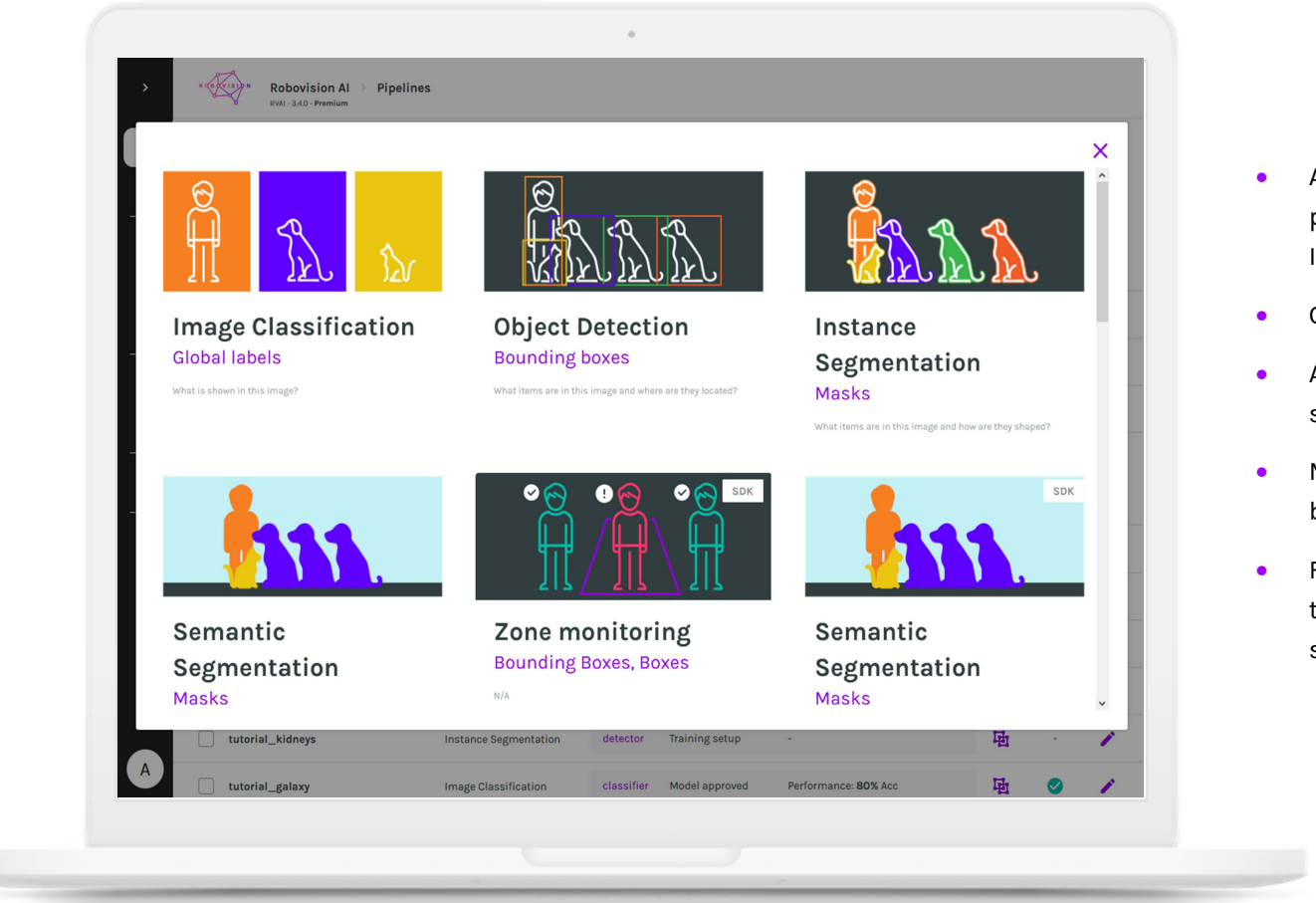


FEATURES

- Comprehensive breakdown of user roles (Administrator, Manager, Master, and Labeler) and their permission levels.
- Bulk user import.
- Ability to create and manage user groups.
- Functionality to deactivate accounts.

ROBOVISION AI MODULE

PIPELINE MANAGEMENT

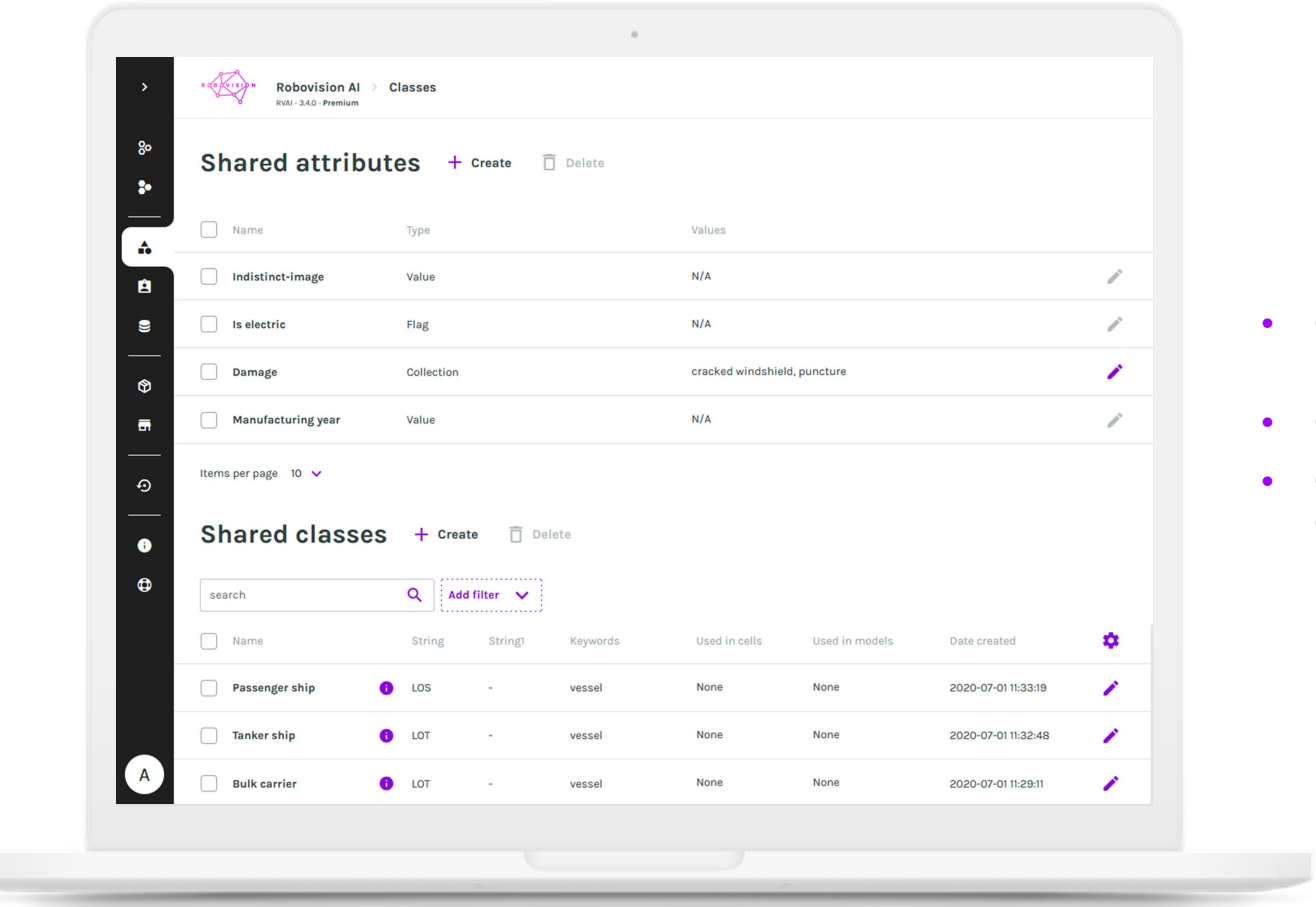


FEATURES

- Algorithms to tackle the main computer vision problems: Image classification, Object detection, Instance segmentation, and Semantic segmentation.
- Custom SDK pipeline layouts.
- Ability to create and train a model from scratch or select and approve an existing model.
- Metadata fields to filter and sort pipelines on business-related data.
- Functionality to create backups of everything in the platform—all the pipelines, data, user and storage settings.

ROBOVISION AI MODULE

GLOBAL SETTINGS

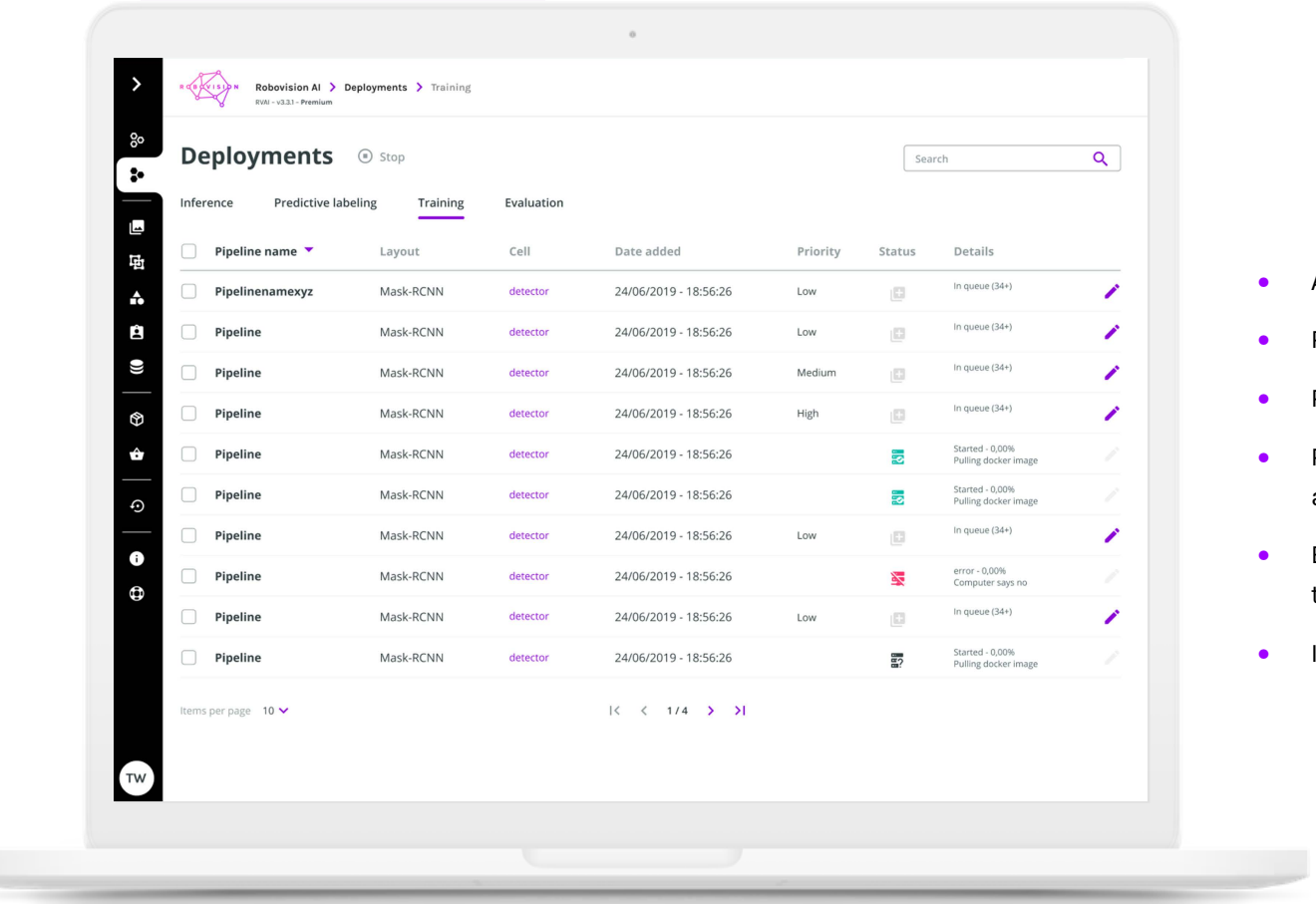


FEATURES

- Global (platform-wide) attributes used to embed additional information within a labeled item.
- Global classes that can be reused in trainable cells.
- Classes metadata to sort and filter extensive lists of classes.

ROBOVISION AI MODULE

DEPLOYMENT MANAGEMENT



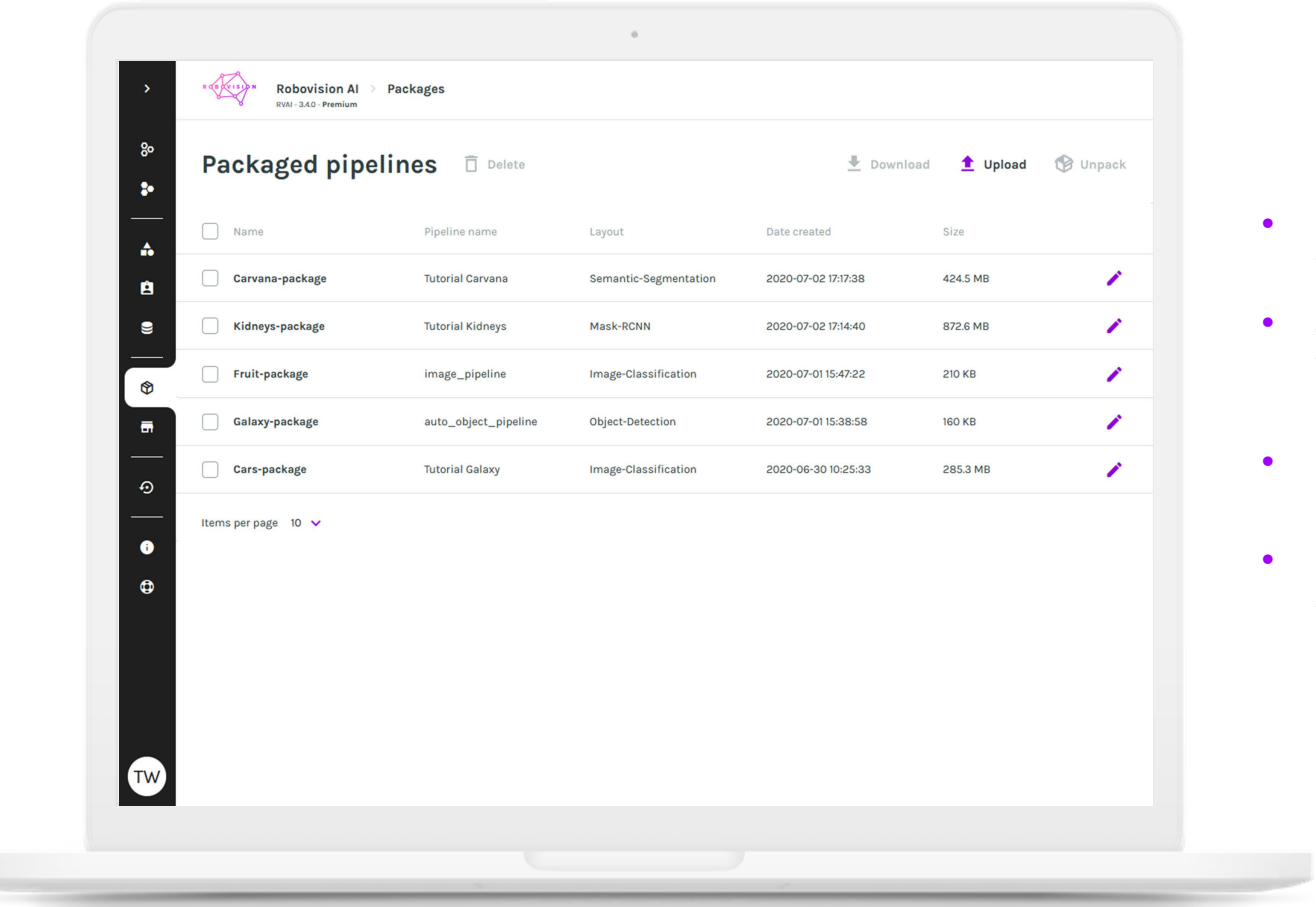
FEATURES

- Ability to manage deployments of different types.
- Pipeline deployments with a model running inference.
- Pipeline deployments that are training a model.
- Predictive labeling pipelines that are generating annotations for the labeling tool.
- Evaluation pipelines for reviewing a model with the evaluation tool.
- Inference pipeline meant to interface with the API.

ROBOVISION AI MODULE

EXPORT/IMPORT

FEATURES

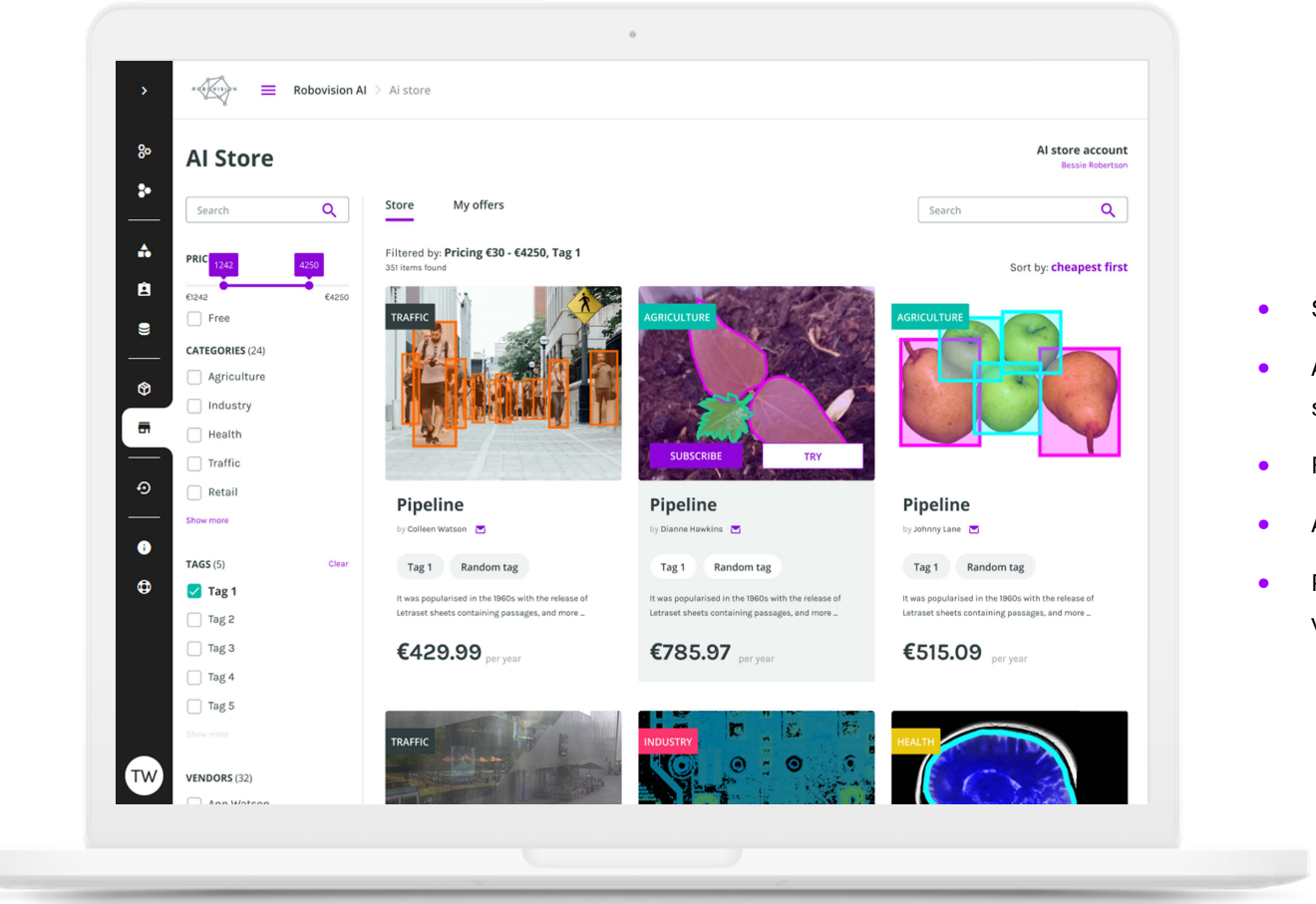


- Packaging a collection of everything in a pipeline: the input samples, the annotations, and the models.
- Ability to create packages with the S3 references to the original files rather than all the package binary data.
- Downloading packages to keep offline back-ups of specific pipelines.
- Uploading packages to the same or another Robovision AI installation with a compatible database version.

ROBOVISION AI MODULE

AI STORE

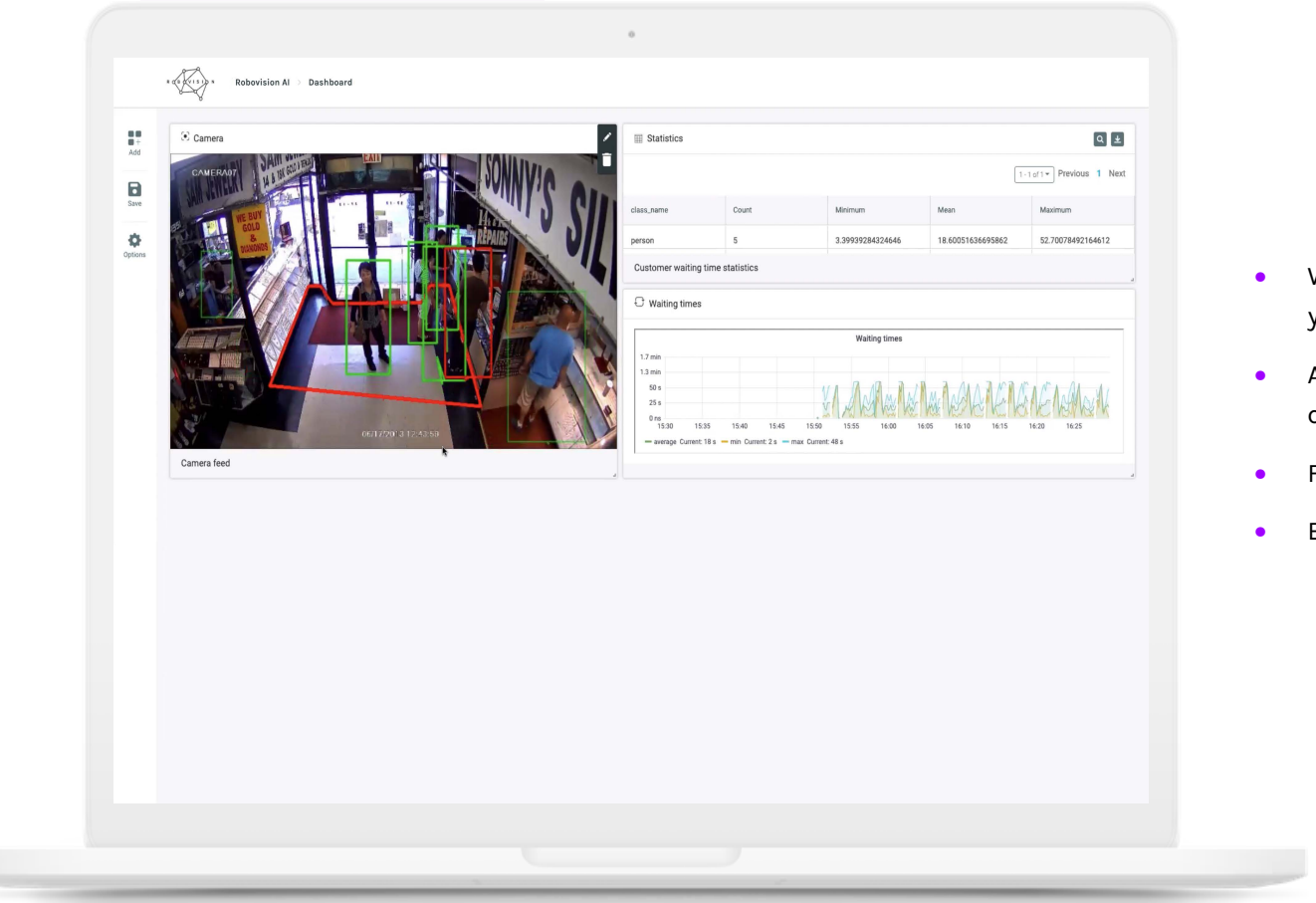
FEATURES



- Separate store account management system.
- Ability to offer pipelines for sale and make subscriptions to other pipelines.
- Free and billable pipelines.
- Advanced sorting and filtering functionality.
- Possibility to use internally as a pipeline version management or sharing tool.

ROBOVISION AI MODULE

DASHBOARDING APPLICATION

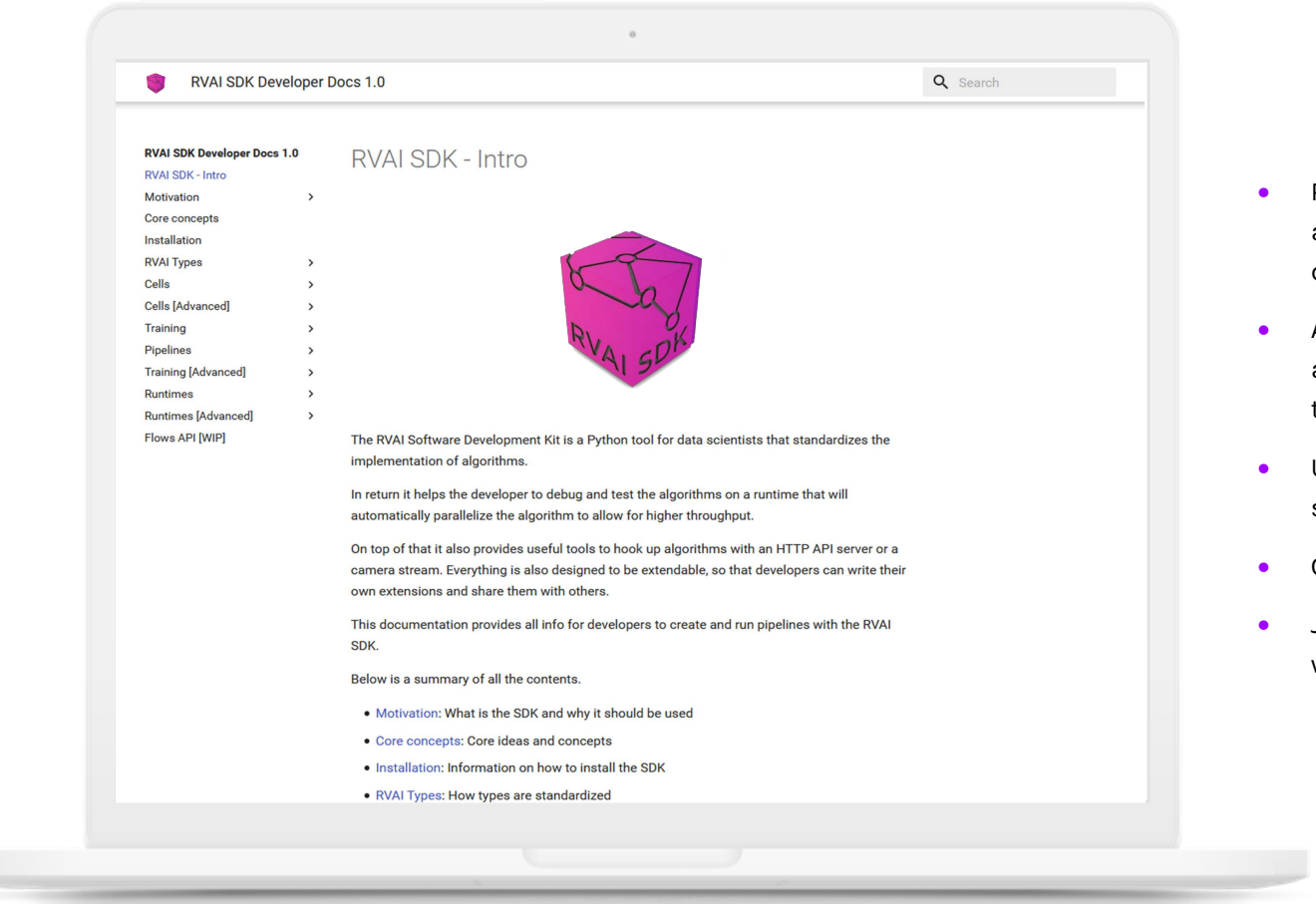


FEATURES

- Widgets for deployments visualization allowing you to make decisions based on real-time data.
- Ability to combine related dashboards into containers—applications.
- Functionality to define runtime parameters.
- Enhanced data visualization with Grafana.

ROBOVISION AI MODULE

ROBOVISION AI SDK

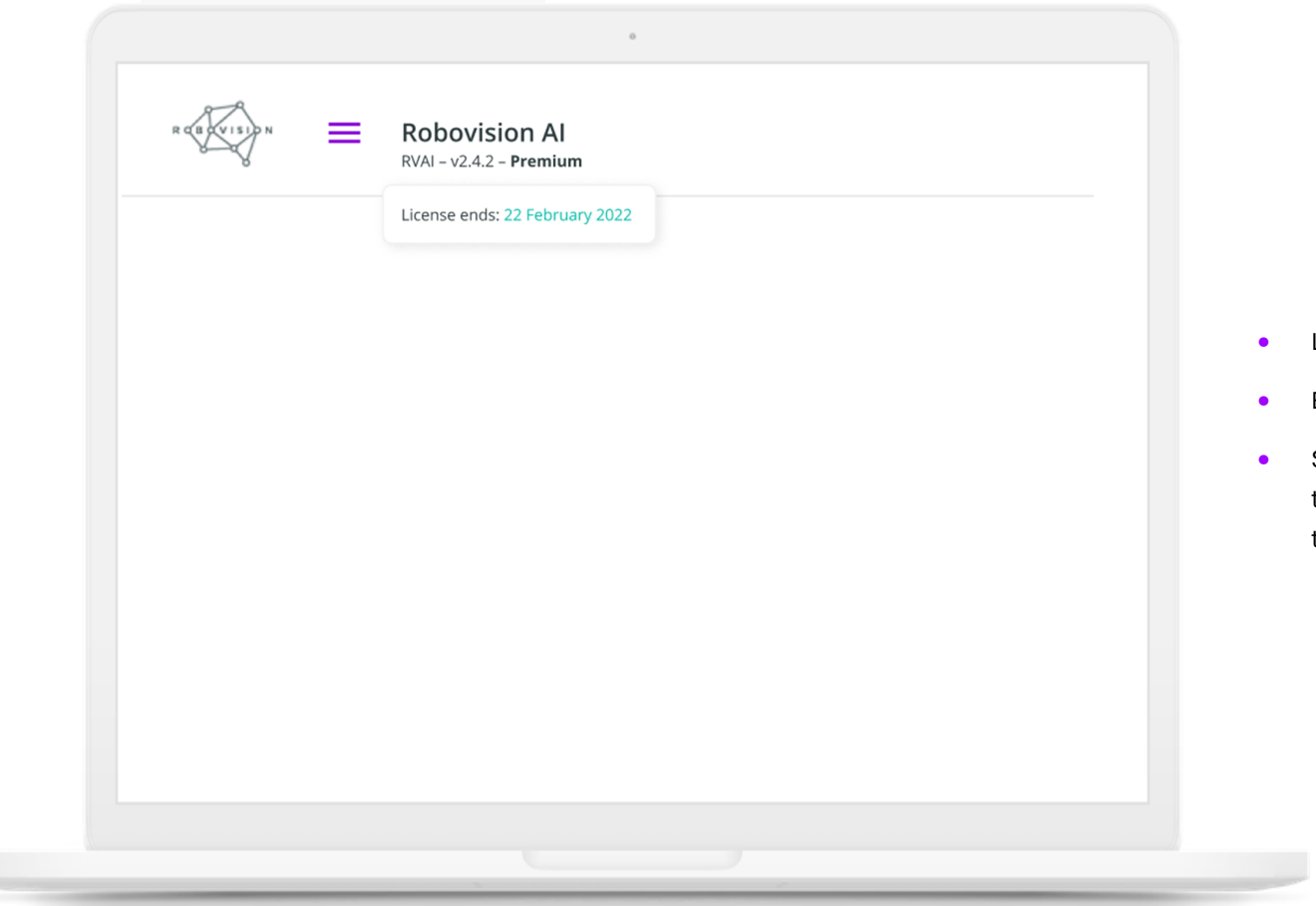


FEATURES

- Platform that allows you to define machine learning algorithms as small building blocks (cells) and create data flows between them (pipelines).
- Ability to standardize the implementation of algorithms and debug or test the algorithms on the runtime.
- Useful tools to connect algorithms with an HTTP API server or a camera stream.
- Comprehensive SDK developer documentation.
- Jupyter notebooks that allow testing SDK tutorials without having to set up an environment.

ROBOVISION AI MODULE

LICENSE MANAGEMENT

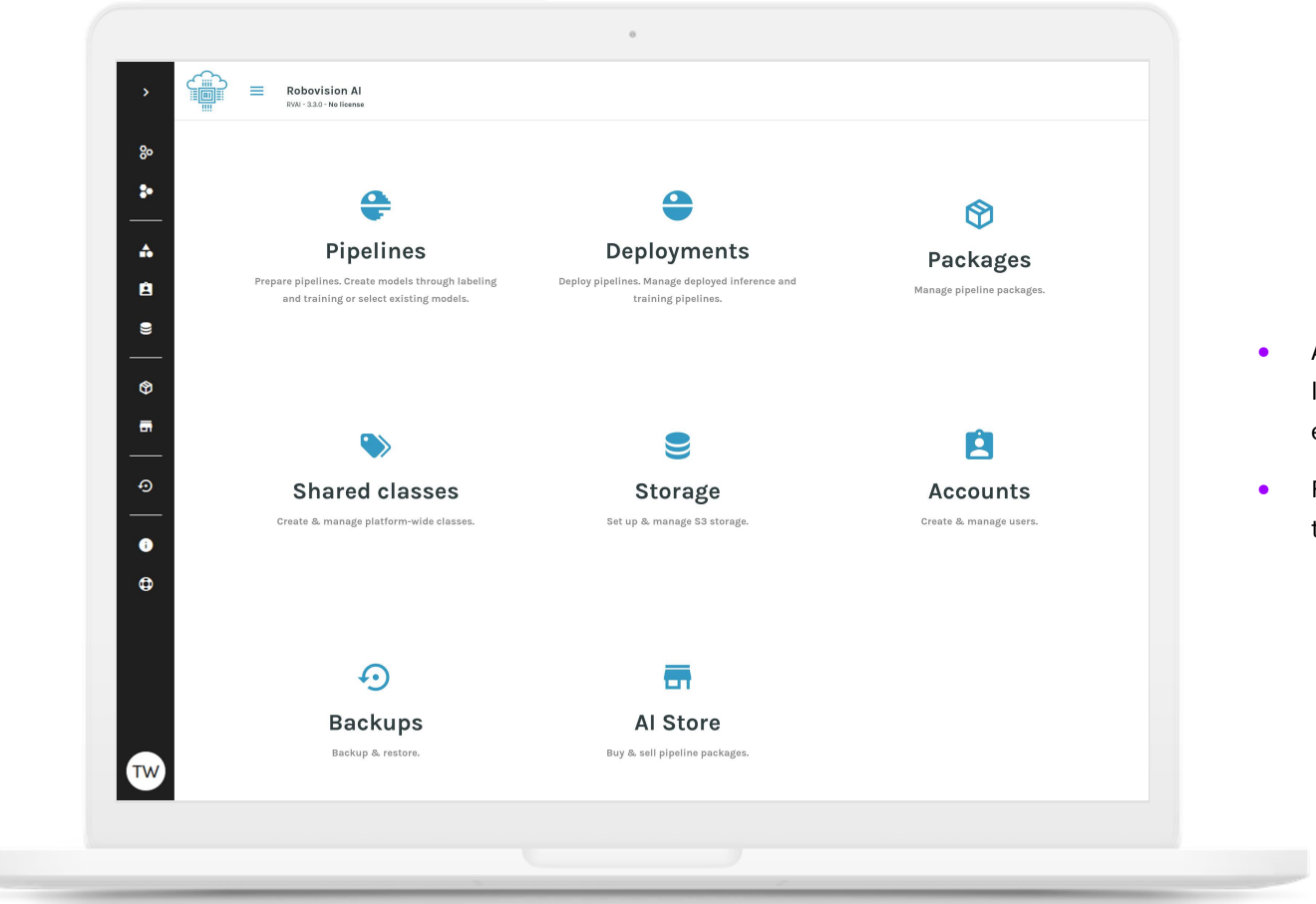


FEATURES

- Live information about a customer license.
- Extra indication when the license is about to expire.
- Stand-alone licensing tool that allows our customers to generate a new licensing file once they need to update or renew their license.

ROBOVISION AI MODULE

OEM AND I18N SUPPORT



FEATURES

- Ability to inherit customers' custom name, copyright, logos, icons, website links, documentation, and other elements of your corporate identity.
- Functionality for smooth localization and terminology configuration across the platform.

ROBOVISION AI PLATFORM

Robovision AI is an easy-to-use AI software allowing you to hit the ground running and enable your organisation with AI capabilities from day 1 without writing a single line of code. Our software breaks the chains of dependency on data science teams and allows users with basic IT skills to become AI experts in their domain.

Robovision AI is incorporated with an image annotation tool that makes it easier, faster, and more accurate to teach machines the context of what they are looking at. Our platform provides an intuitive machine learning workflow enabling you to build and deploy highly accurate models. Algorithm cells (such as classifiers, segmentors, (anomaly) detectors, event generators and trackers) and application workflow result into intelligent pipelines. A pipeline is a string of cells or a single cell that can be trained and make models. These cells with their models can work together to run inference as one pipeline.

ROBOVISION AI WORKFLOW

STEP 1

Create a pipeline and add a dataset to it.

STEP 2

Set up labelers who will annotate your data set.

STEP 3

Create labeling classes and set up a label session.

STEP 4

Manage a label session and enable predictive labeling.

STEP 5

Create a model and set up training parameters.

STEP 6

Manage training session and approve the model for deployment.

ROBOVISION AI JUPYTER ORCHESTRATION SUITE

The Robovision AI Jupyter Orchestration Suite is implemented as follows. The DGX A100 will contain Kubernetes with a JupyterHub orchestration service installed. This allows data scientists to easily spawn a personal JupyterHub server. This way they can create their own Jupyter Notebooks in their own personal environment. The JupyterHub server comes with a set of machine learning base images, with our Robovision SDK base image, or with a custom base image.

Each user gets their own slice of hardware from the DGX A100. The amount of memory, number of GPU's and number of GPU's assigned to a user can be configured. Between user logins, the storage is persistent. This means users can log in, do some work, and logout. Memory and CPU/GPU usage will be freed up, but their storage remains persistent. Storage can be located on the DGX A100 or it can be configured to use an NFS share on another server in the network. One can also configure a shared folder to be shared with all Notebook users.

User management is done by using a simple user authentication system where a user picks a username and password or by integrating with an OAuth provider such as Auth0, Bitbucket, CILogon, GitHub, GitLab, Globus, Google, MediaWiki, Okpy, OpenShift, Azure Active Directory, OpenID Connect, LDAP, and others. An administrator can whitelist which users are allowed to log in.