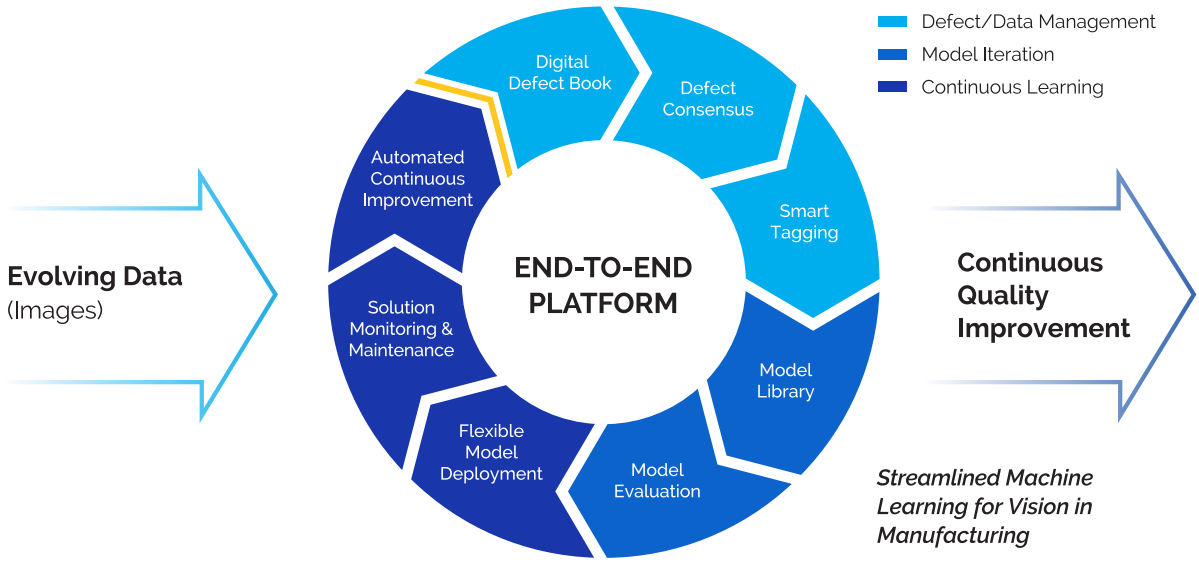
Accelerate AI Adoption

Easily manage your data on LandingLens, the Industrial AI Vision Inspection Platform

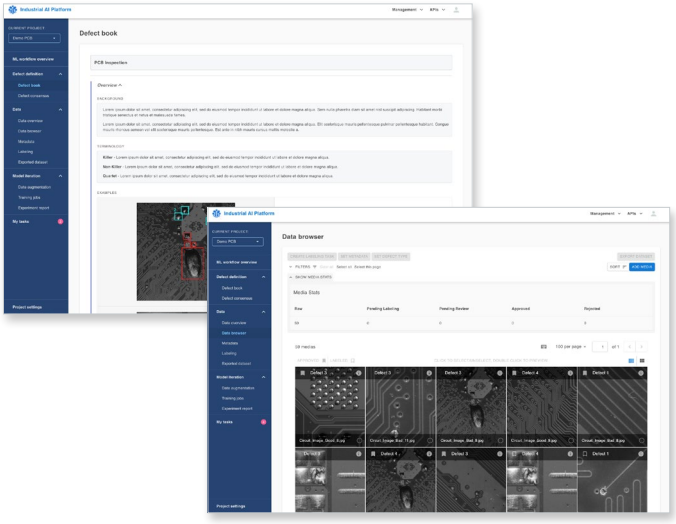
LANDING AI

LandingLens

Landing AI's industrial AI platform consists of a suite of interconnected tools that enables you to build, deploy, manage and scale AI solutions for visual inspection in an end-to-end workflow.



Designed from the bottom up to enable manufacturers to take projects from concepts to scalable solutions with speed, LandingLens minimizes customization and scaling challenges. While AI models are unique, leveraging universal tools can expedite complex projects. Built for evolving data, LandingLens is comprised of a suite of tools to automate machine learning for industrial vision.



Define Defects

The platform includes the Defect Book, a living virtual catalog of defect definitions. Designed to be your dictionary for your defects, the defect book drives consensus between subject matter experts and machine learning engineers on what is and is not a defect. You can identify and outline known defects with descriptions and sample images to build out a rich repository that can be referenced during labeling in the downstream process.

Defect Book

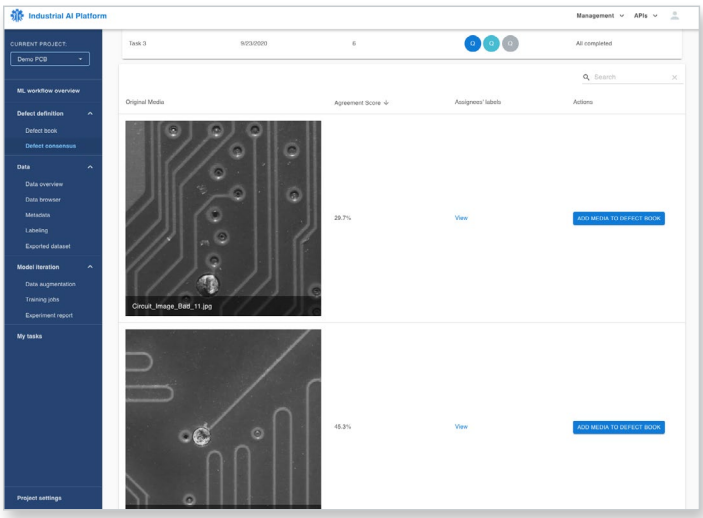
Defect Definition – User interface and guidance for clearly and concisely defining each defect type.

Example Images – Example images loaded for each defect type for both OK (acceptable part) and NG (defective part). Example images are available in the labeling process for reference. This process is described later within this guide.

Defect Organization – Defects organized into categories and types in an easy-to-access and easy-to-navigate "book."

Defect Consensus

The Defect Consensus tool enables you to quickly identify ambiguities in your defects and data. By identifying and resolving these ambiguities, you can ensure that there is no time wasted to rework due to inaccurately labeled data or confusion in the labeling process.



Defect Book - Defect Consensus

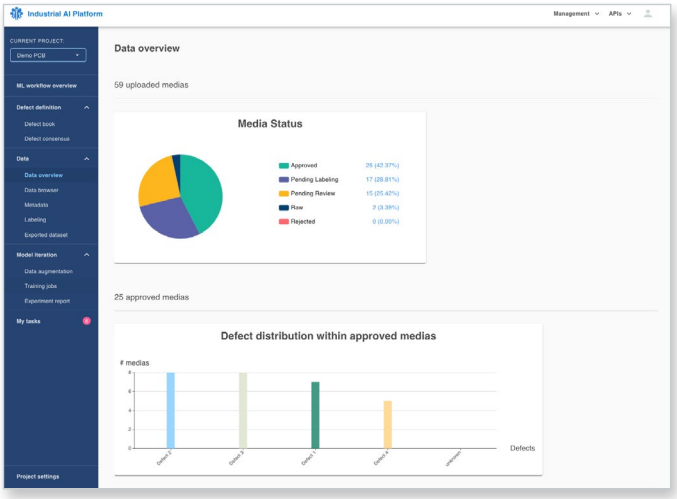
Cross-Defect Consensus – Identify sets of defects that cause the most confusion among labelers.

Defect-Level Consensus – A tool to determine circumstances where there is ambiguity between 'acceptable' and 'defective' severities within a defect type.

Consensus Matrix – Easily visualize where there is confusion between your defect classes.

Global Dataset and Defect Data

Data in the platform is organized in a global dataset that ensures all of your data can be queried or browsed within a single location. The health of data for each defect type can easily be interpreted thanks to the labeling approval and review system.



Defect Book - Global Dataset and Defect Data

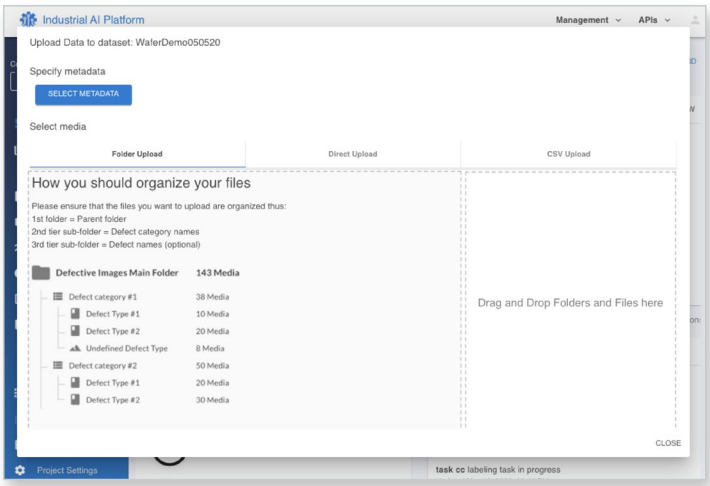
Global Dataset – Data is ingested within a global dataset where image data is treated as a single source of truth to ensure that the data being viewed is always the latest state.

Defect Data Metrics – Visual metrics that allow you to clearly evaluate the health of your project, including labeling status to evaluate progress on labeling and defect distribution to identify gaps in data.

Defect Data Summary – A table that enables you to quickly see the status of your defect data, including the number of images per defect that are unlabeled, how many have been labeled, and how many labeled images have been approved by a supervisor.

Collect Data

Getting data to the platform is a critical first step in an ML project lifecycle. The platform provides various means to ingest data including APIs, CSV, and direct upload to ensure that you can bring your data to the platform quickly without losing any important information such as labels or metadata.



Data Collection

API – Data upload via API.

CSV – Data upload via CSV.

Direct – Upload images locally via drag and drop

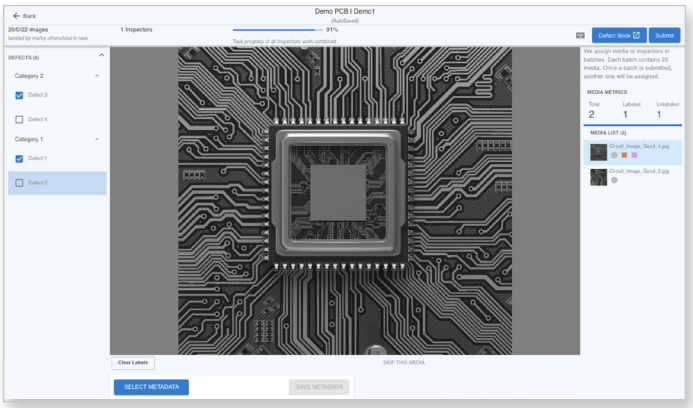
Direct Folder Structure – Upload existing folder structures to automatically populate the current project with existing classifications.

Labeled Data Upload - The ability to upload images with pre-existing labels.

Bulk Upload Image Labels and Metadata – Bulk upload image labels and metadata via API.

Label Data

The **Labeling Tool** is used to rapidly annotate images and contains a robust set of features and functions that enable labeling of all types (bounding box, segmentation, image classification) with speed. The Labeling Tool is linked to the Defect Book and shows reference images of the defect type being labeled for the purpose of improving accuracy.



Data Labeling Features

Label Types – Image classification, bounding box, pixel.

Batch Labeling – Labeling, labeling review, and approval all happen in a batched process to ensure that data is always available downstream and that downstream tasks are never put on hold due to tasks not being complete.

Task Management – Supervisor sets can easily delegate tasks for inspectors or subject-matter experts to complete and can be monitored throughout.

Task Notifications – Assignees receive notifications of new tasks and can access the Labeling Tool to complete the tasks. Supervisors are notified when the tasks are complete.

Custom Labels – Support for custom/flexible labels (e.g., binary vs. multi-class labels with custom text).

MetaData Filtering – Filter datasets by metadata.

Reference Image – The ability to display thumbnail images of example images from defect book for reference.

Mass Image Label – The capability to label multiple images simultaneously.

Support for Custom/Flexible Labels – The ability to create custom label categories.

Modify – Copy, paste, move, delete, modify existing labels on image.

Data Management for Model Training

Once you have created an accurately labeled dataset, you can use the platform's data-management features to easily split your data into training, validation, and test sets and visually understand the inputs into your model

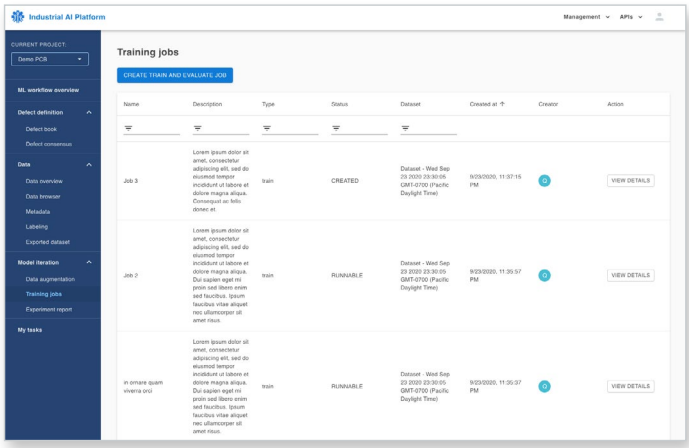
Data Management Features

Data Splits – The platform provides the ability to split the global labeled data into train/dev/test sets, create snapshots, and visualize the snapshot data.

Data Augmentation – You have the ability to choose from a variety of preprocessing and augmentation transforms using a UI that allows you to visualize what the images will look like.

Train Models

Snapshots of the datasets can be created, exported, and scheduled for training through the platform's training tool. You can leverage prebuilt architectures for a wide breadth of visual applications including object detection, classification and segmentation.



Model Training

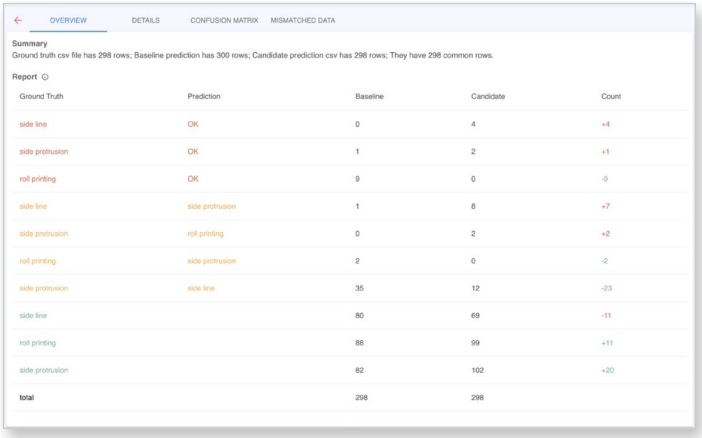
Out-of-the-Box Model Architectures – You will have the ability to train prebuilt models for a variety of vision use cases including object detection, semantic segmentation and image classification.

Launching Model Training and Eval – Allows a single-point interface to monitor model runs and eval runs and seamlessly use the data that is split into train/dev/test while viewing results.

Initiate Training – Initiate training from GUI.

Experiment Report

This tool allows you to quickly analyze a candidate model's performance against an existing model to easily determine if the candidate is suited to replace the existing model. You can ingest training results of models and compare performance of multiple models against a common dataset. You can analyze patterns in model results and strategize methods to improve your performance.



Model Evaluation/Experiment Report

Side-by-Side Comparison – Visualize where your models differ with side-by-side comparisons of model predictions against ground truth.

Prediction Visualization – See ground truth, baseline predictions, and candidate prediction images in one UI to easily debug issues.

Confusion Matrix – See a side-by-side confusion matrix.

Cloud-Based Platform Specification	
Client Operating System Requirements	OS: Mac, Linux, PC Browser: Chrome, Firefox Stable Internet
Supported File Formats	PNG, BMP, and JPEG Currently on support images
Data Export Type	PNG, JSON, CSV
Hardware Requirement	No restriction for cloud-based platform
API Rate Limit	10k requests/second

With an entire workflow on one system, LandingLens is uniquely set up to tackle the roadblocks that come from ambiguous defects, small data, and changing environments and requirements. A complete workflow means metrics and information can be aggregated to depict an overview of all the deployments, while also allowing appropriate teams to drill down into specifics at the per-factory, per-product, per-line, or even per-defect level. With LandingLens, the Industrial AI Visual Inspection Platform, you can harness the power of AI to create long-term manufacturing value.