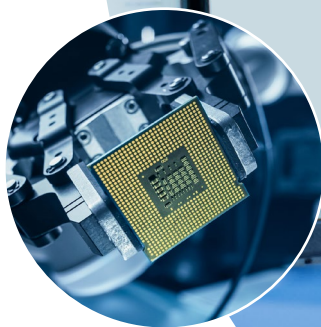# LANDING AI™

# LandingLens Feature Guide

Easily build and deploy visual AI solutions at scale on LandingLens, the Industrial AI Vision Inspection Platform

LandingLens

LandingLens is the only end-to-end visual inspection platform that enables computer vision engineers to seamlessly train, test, and deploy deep-learning models to edge devices. With a data-centric approach throughout, LandingLens manages data, accelerates troubleshooting, and scales to deployment.

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.
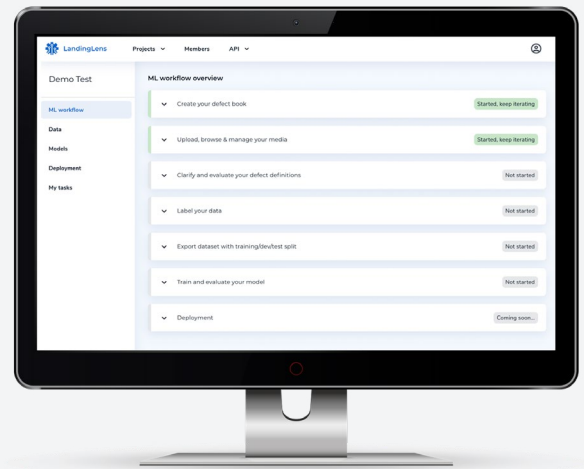
Create your defect book

The **Defect Book** was inspired by the real world manufacturing practice of providing a document or PDF to inspectors as a single source of truth to ensure consistent identification of defects. In LandingLens, the defect book is a living electronic document that allows users to systematically and objectively define the various defect categories that may be found in a particular use case in order to remove any ambiguity.

Typically labelers **will have this guide open alongside their labeling task** and will refer back to it when faced with ambiguous cases.
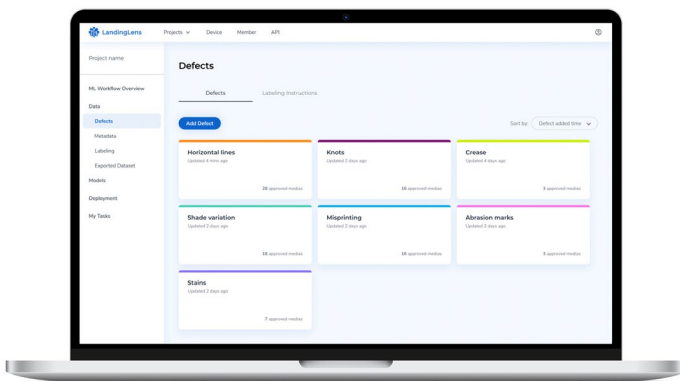
Defect Book

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."
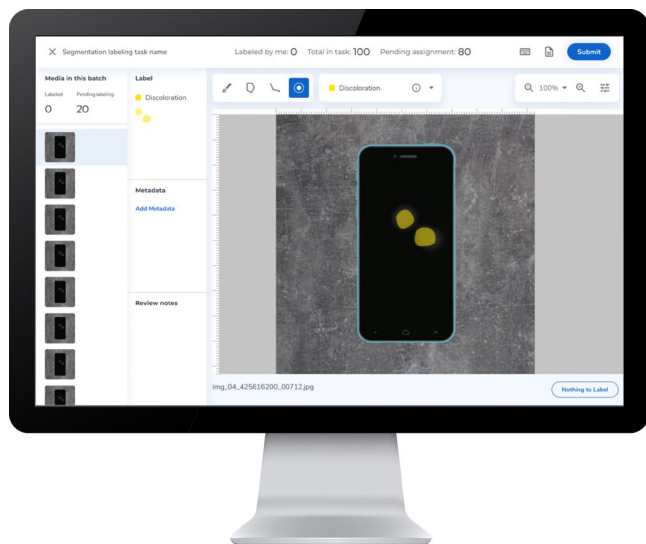
Upload, browse and manage your media

Landinglens offers multiple approaches to help you upload defects and OK images: folder upload, direct upload, or CSV upload.

Clarify and evaluate your defect definitions

One of the most difficult aspects of building a robust model is getting alignment among labelers on what classifies as a certain defect type. With your media uploaded, quality experts can edit existing defect classes and create new defect classes that feed the Defect Book.

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 your 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 – Bounding box, segmentation.

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 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.

MetaData Filtering – Filter datasets by metadata.

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

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

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

Export dataset with training/dev/and test split

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.
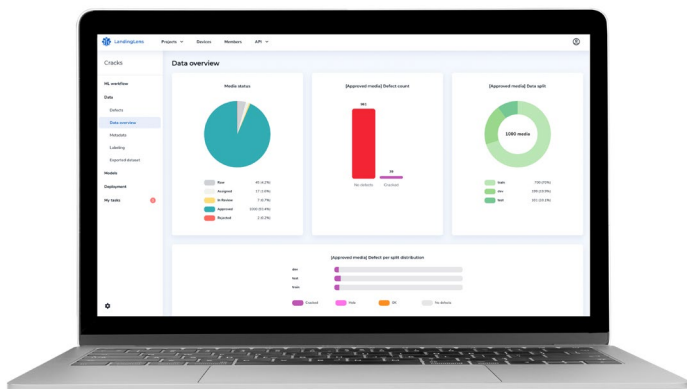
Data Management Features

Auto Splits – Automatically coordinate equal division of defect classes into your train / dev / test data sets.

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

Pre-Processing – 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.

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.

Error Analysis – Troubleshooting model performance is easy with LandingLens Error-analysis - easily review performance results & outcome classifications and drill down to the specifics by overlapping ground truth and model predictions directly on the image in question.

Train and evaluate your model

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. We offer a simple UI for those unfamiliar with ML as well as a programmatic, CLI based approach for those with more experience.

Deployment

Deployment is where you really begin to see the fruits of your efforts — namely getting production ready models deployed and making decisions on your behalf.

We offer several ways for you to deploy your models to edge devices.
- Windows application is currently our easiest approach to deployment, allowing you to download a native app & manage your models directly from your Windows 10 device.
- Docker allows you to deploy our LandingLens Docker app to a Docker container, which you can utilize on any compatible device.
- Cloud allows you to deploy models to a cloud instance, specifically EC2 Wavelength in AWS. This approach is very useful once set up but requires knowledge of cloud computing and AWS.
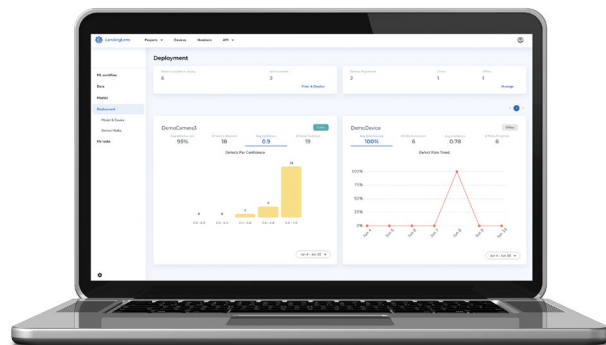
Summary

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.

About Landing AI

Landing AI™ empowers customers to realize the business and operational value of computer vision using enablement tools. The company's flagship product is LandingLens™, an enterprise MLOps platform that offers end-to-end workflow to build, iterate and operationalize AI powered visual inspection solutions. With data quality being a key to the success of production AI systems, LandingLens™ is equipped with a host of specially designed data preparation tools and workflows that help users achieve optimal data accuracy and consistency. Founded by Dr. Andrew Ng, co-founder of Coursera, former chief scientist of Baidu, and founding lead of Google Brain and guided by a data-centric AI approach, Landing AI is uniquely positioned to help companies successfully move their AI projects from proof-of-concept to full-scale production.

LANDING AI

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