Hands-On: Road Sign Detection

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Goal

The goal of this hands-on to use Azure Custom Vision AI to train a model to detect and categorize road signs in images.

Prerequisites

Please create an Azure account and sign in to Azure.

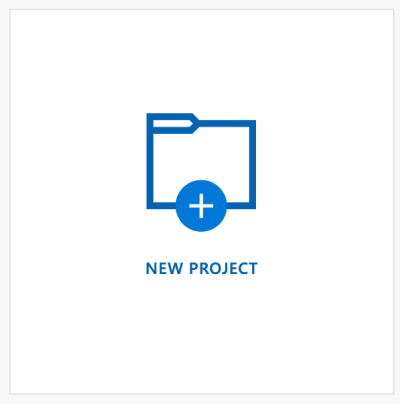
Login to https://www.customvision.ai/

Download and extract the training and test data (https://github.com/oh22is/GlobalAIBootcamp/blob/main/hands-on/01%20RoadSignDetection/RoadSignDetection-data.zip).

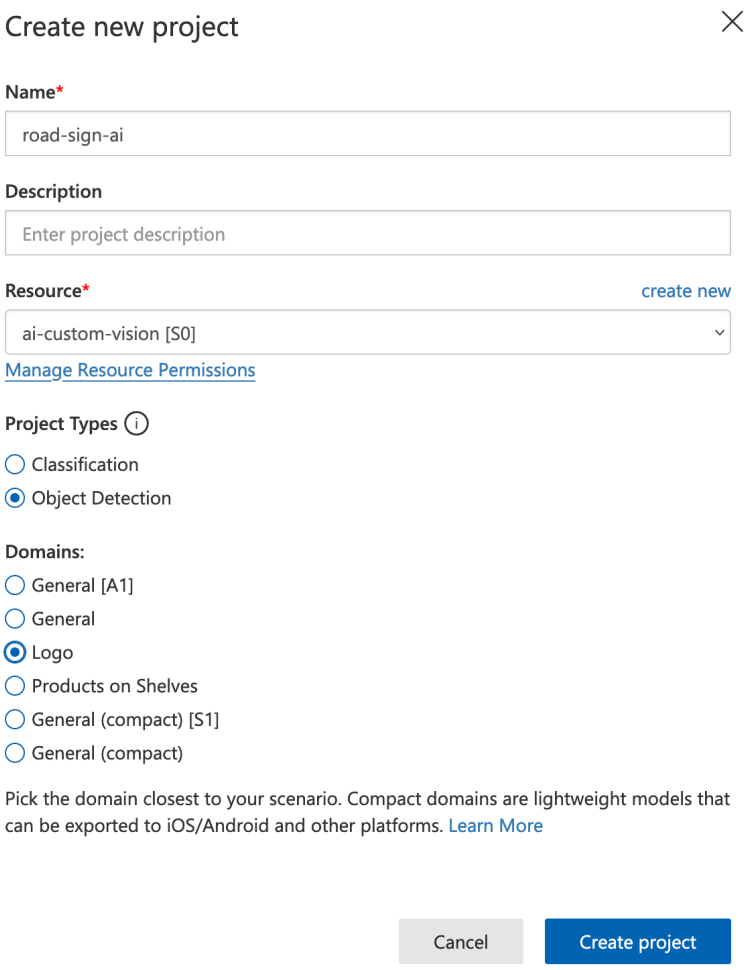
Create a new Custom Vision AI project

Note: If possible select as a *Location* always “West Europe”.

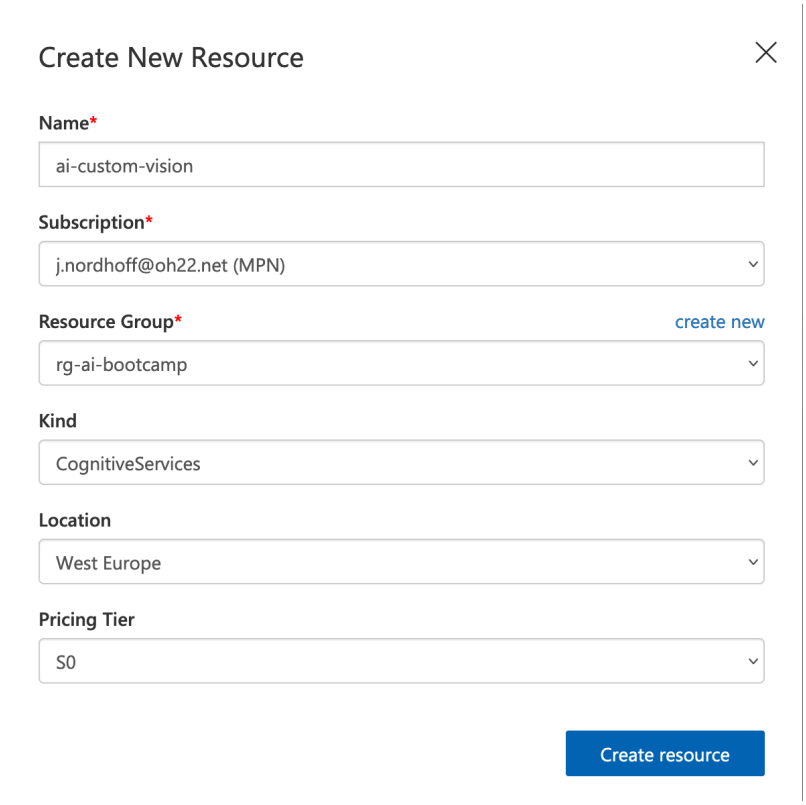
1. Create a new Custom Vision AI project by clicking on “New Project”.



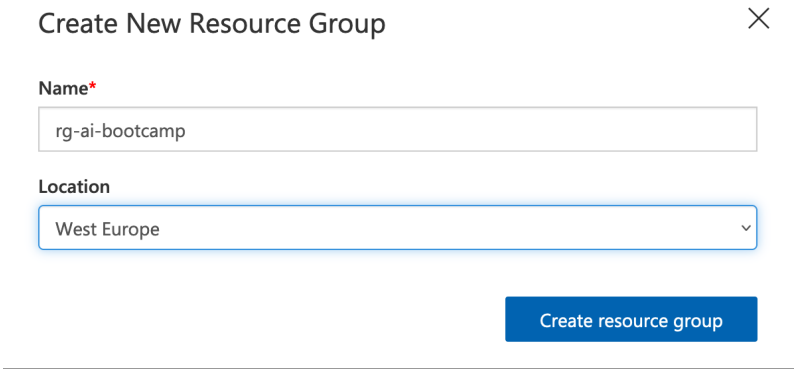
2. Set a name for the project and select the *Project Type* “Object Detection” since we want to detect road signs in an image. The domain should be “Logo”. If you don’t have a resource click on “create new” to create a new resource for your training.



3. To create a new resource please give your resource a name, select your subscription and a resource group. If you don't have a resource group yet click on "create new".



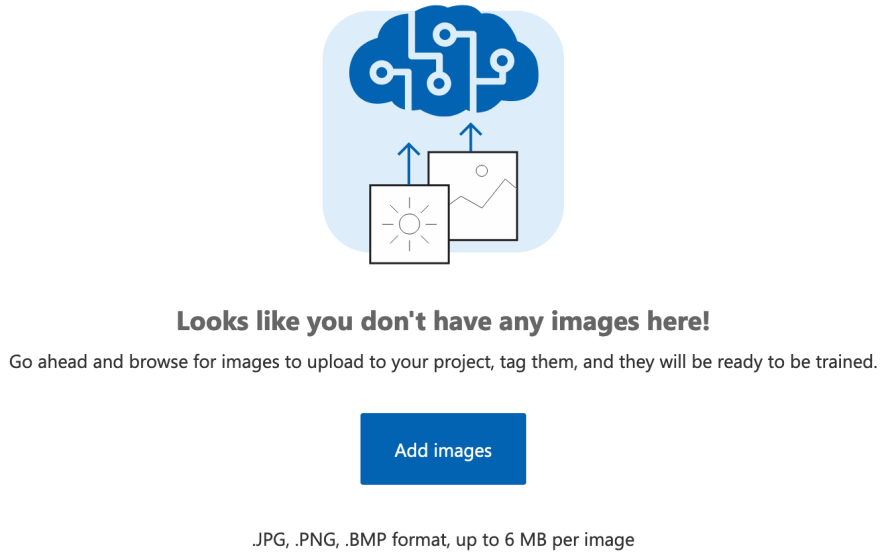
4. To create a new resource group give your resource group a name. A resource group is a container in which Azure puts your services.



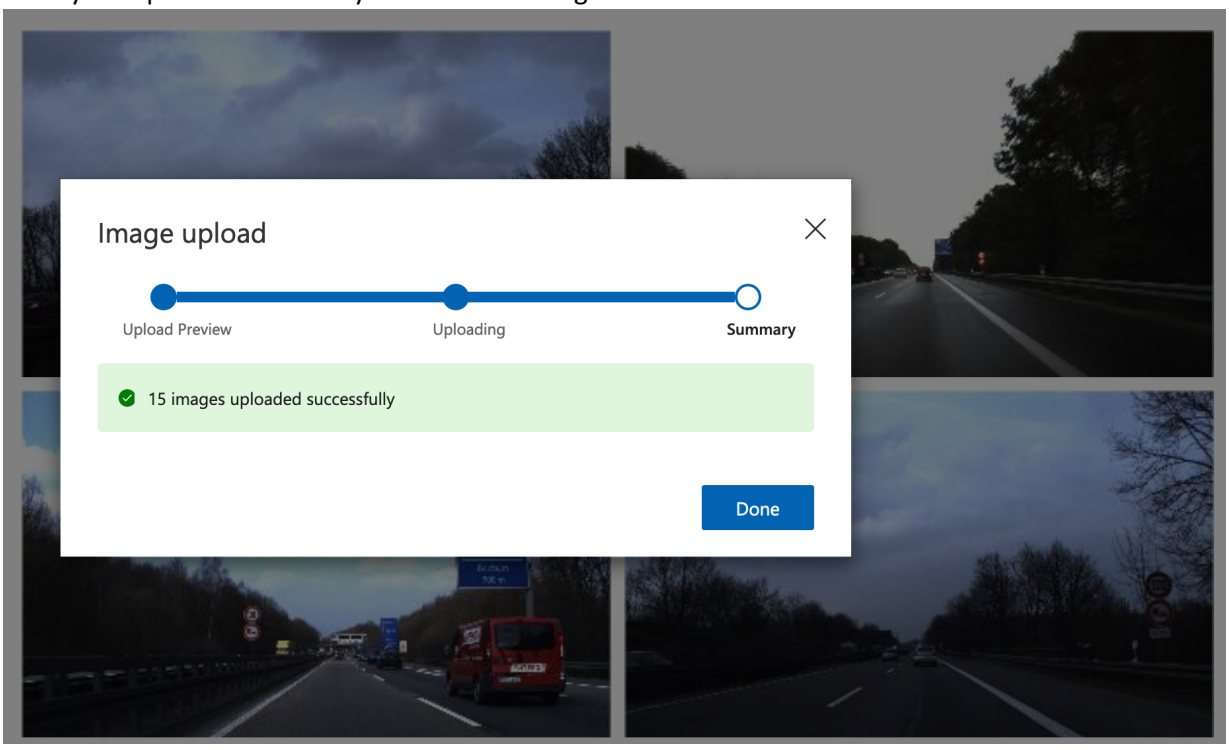
Upload and tag the data

To train your model you need to upload data first. Please use just the data from your train folder for training.

1. Click on “Add Images”

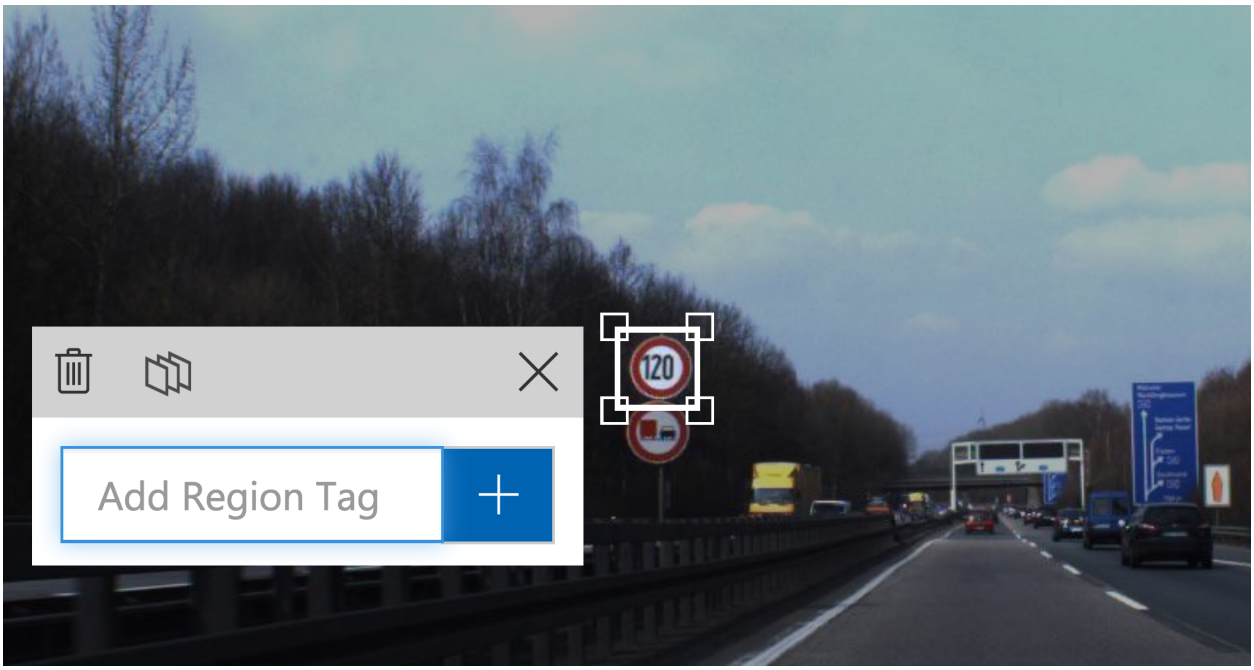


2. After your upload succeeded you will need to tag the data first.

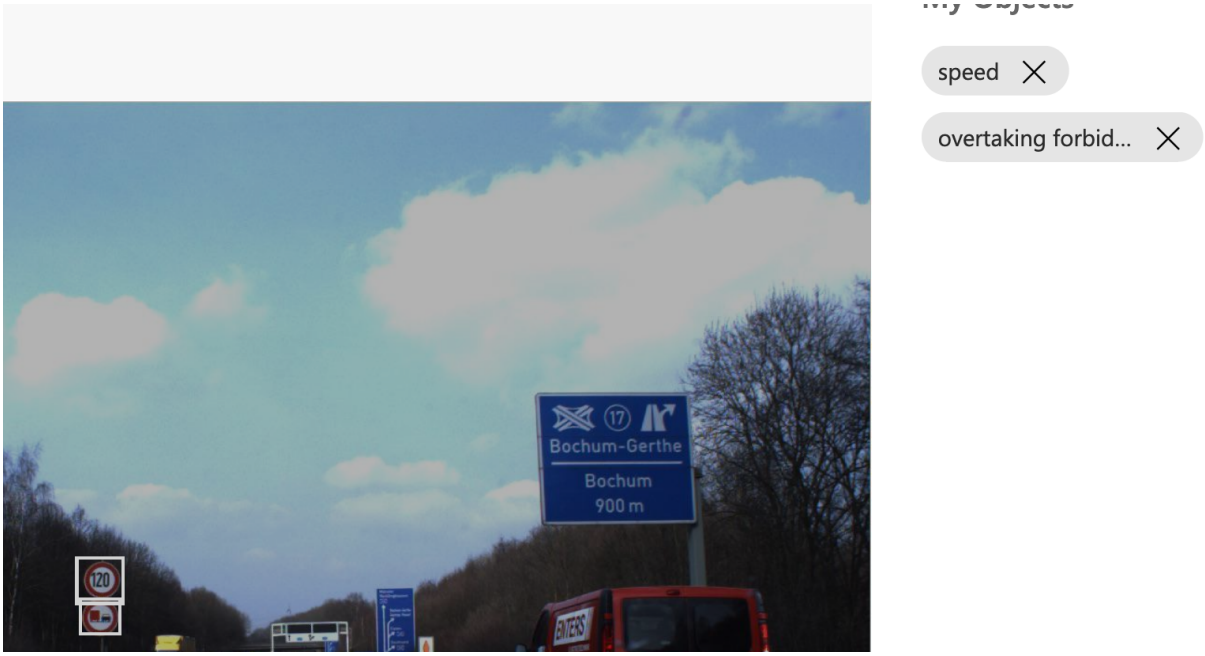


3. To tag objects on an image please click on one image.

4. The image enlarges. Please draw a square around the “speed” and “overtaking for trucks forbidden” signs. It is also possible to zoom in.



5. Your result after tagging should be similar to that:

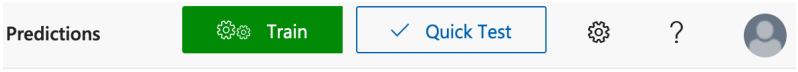


6. Proceed with all training images.

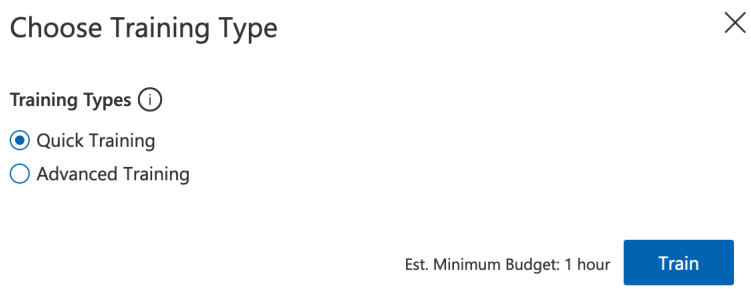
Train your model

After tagging the data is completed you can train your model.

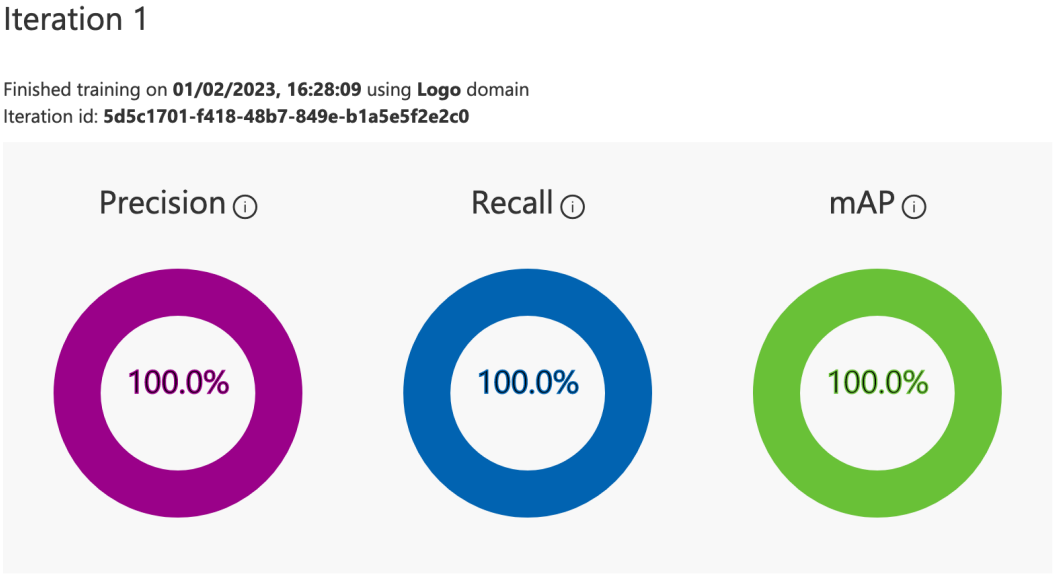
1. To train your model, please click on “Train”

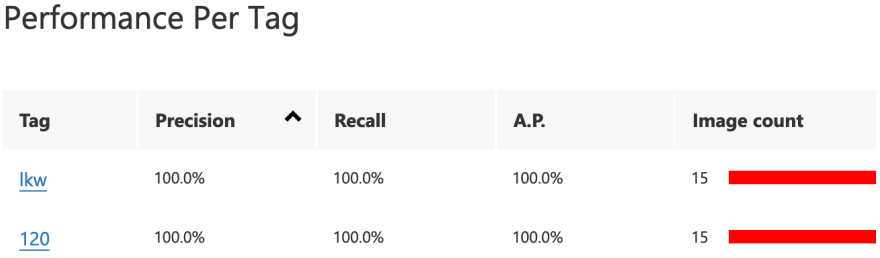


2. Choose the training type “Quick Training”.



3. Your model gets trained now. After training is finished you should see something like this:



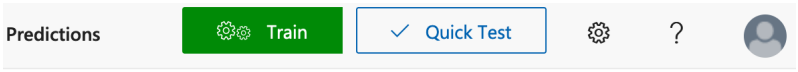


4. The training is now finished and you can test your model

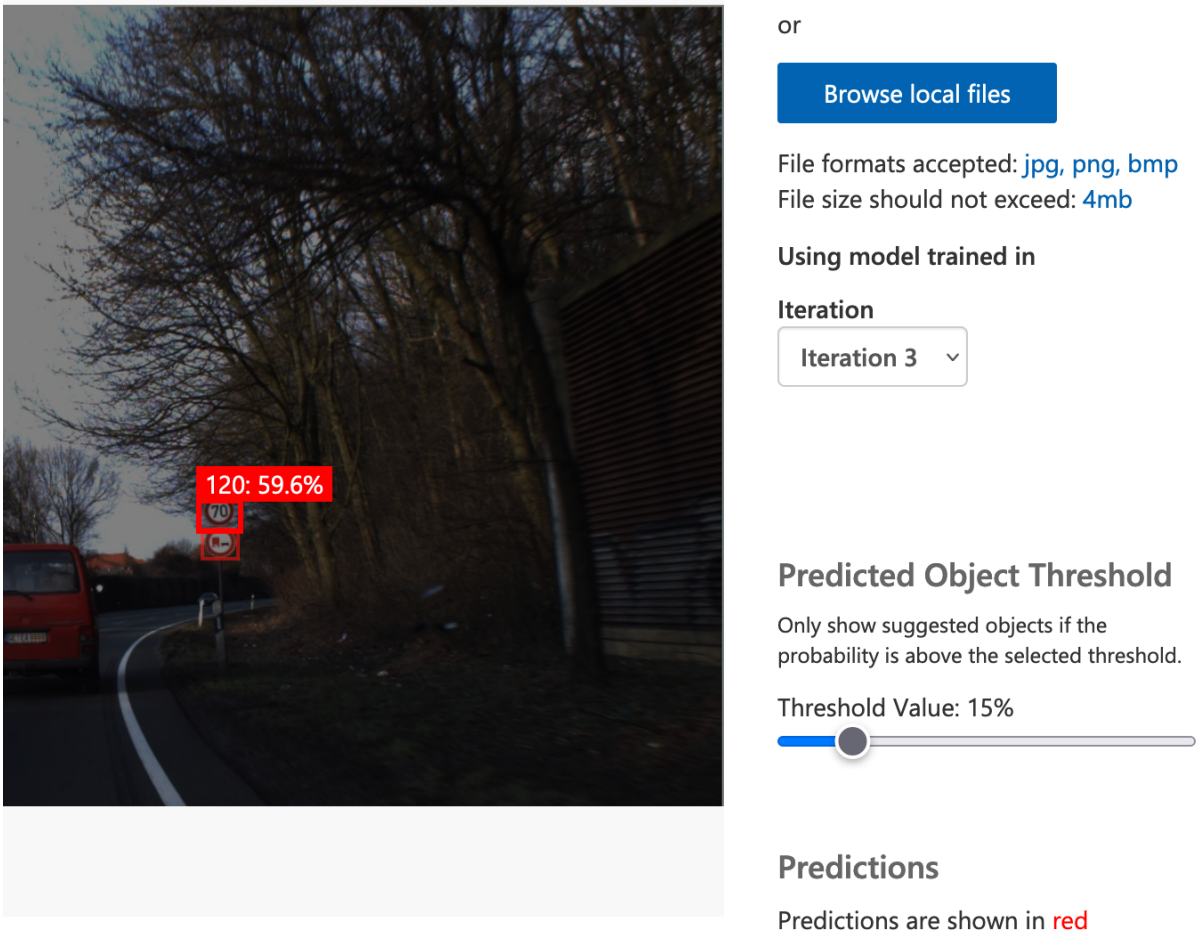
Test your model with test data

To test your model, it is important to use new data, which the model hasn't seen before. Therefore, please use the images in the provided test folder.

1. To test your model please click on "Quick Test"



2. After you uploaded an image, the model detects and shows signs on your image.



3. If you are satisfied with the model performance, you can create an endpoint and use the model in your software.

My model doesn't always get everything right!

Your model might make mistakes the reason might be one of the following:

- We just used a few training images with poor quality.
- We just ran a quick training.
- The problem is complex.
- A model with 100% accuracy is not possible.