”ADFI Image Recognition” Tutorial

June 2024 edition.

AI Robotics Ltd.

Overview

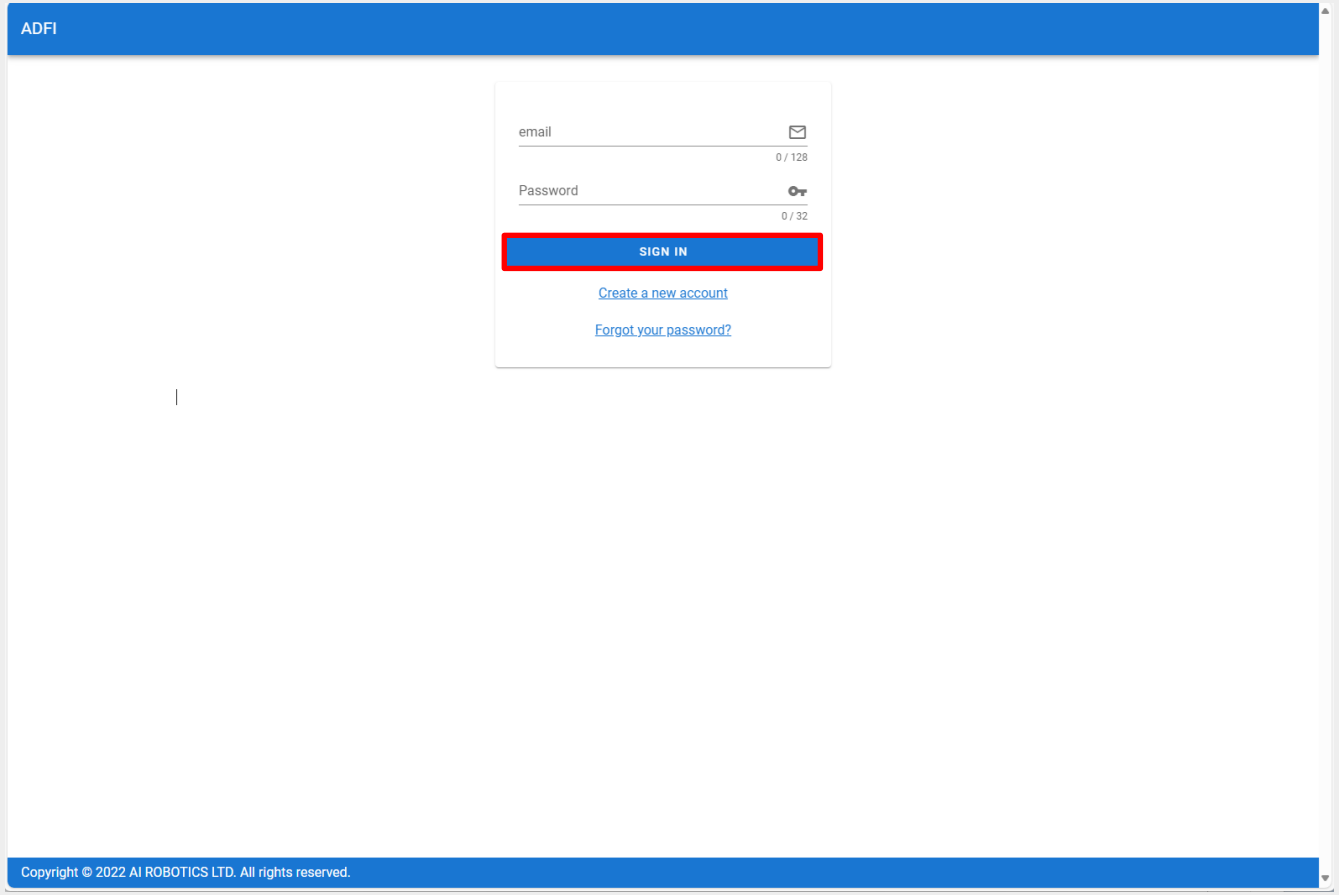
In this tutorial, you will create an image recognition AI using a sample image dataset and verify the performance of it. You will also create an application for the AI to be used on smartphones.
The procedure is explained in the following flow.

1. Create your account (for the first time only)
2. Create an image recognition AI
3. Create an AI app
4. Use image recognition AI in your local environment
5. Reference information (changing to a paid plan)

1. Create your account (for the first time only)

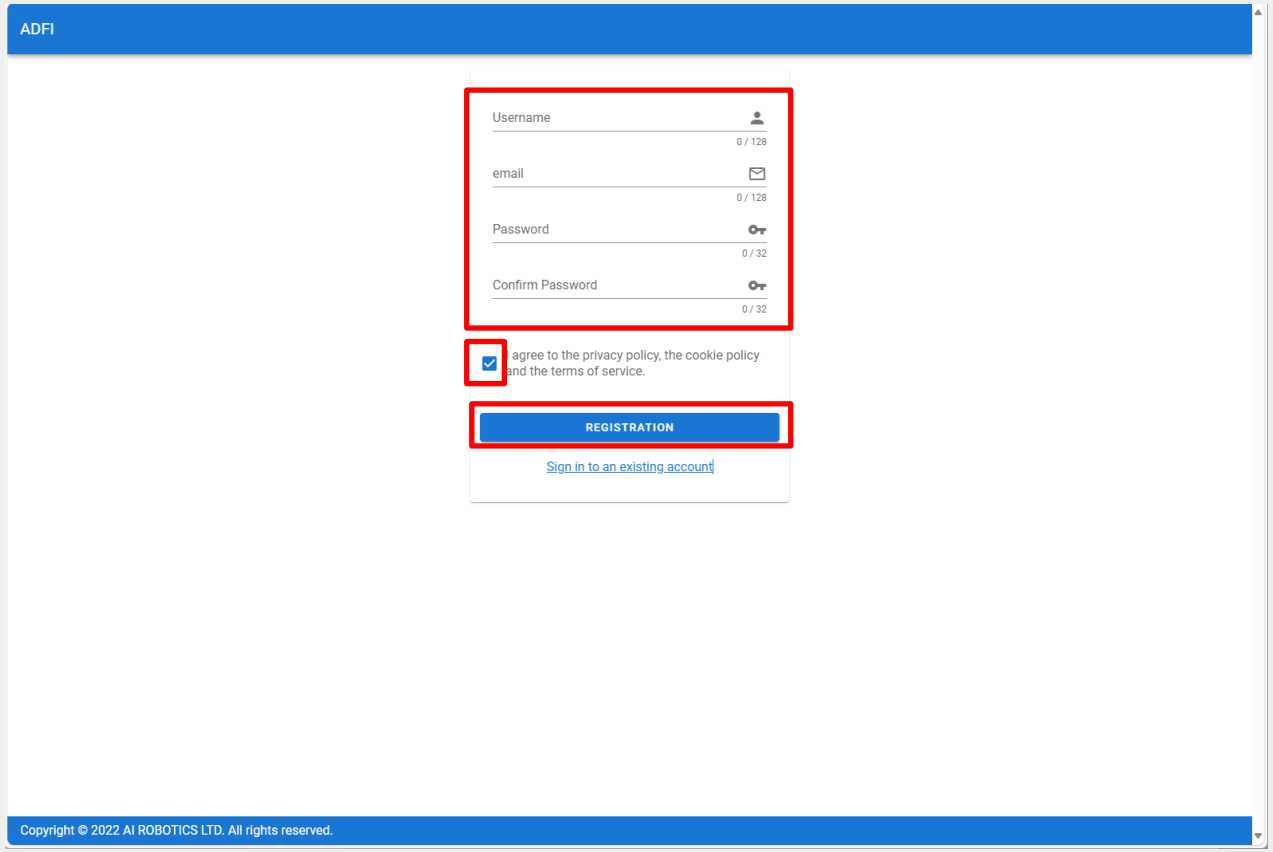
Create your account (for the first time only)

1. To create a new account, go to “https://web.us.adfi.karakurai.com/webapp/signin”
2. And choose Create a new account.
   * After the second time (after creating an account),
   enter your email address and password and press **SIGN IN**.



Create your account (for the first time only)

3. Enter an account name and email address.
4. Create your account password.
5. Once you have entered and confirmed your password.
6. Select the checkbox to accept them, choose **REGISTRATION**.

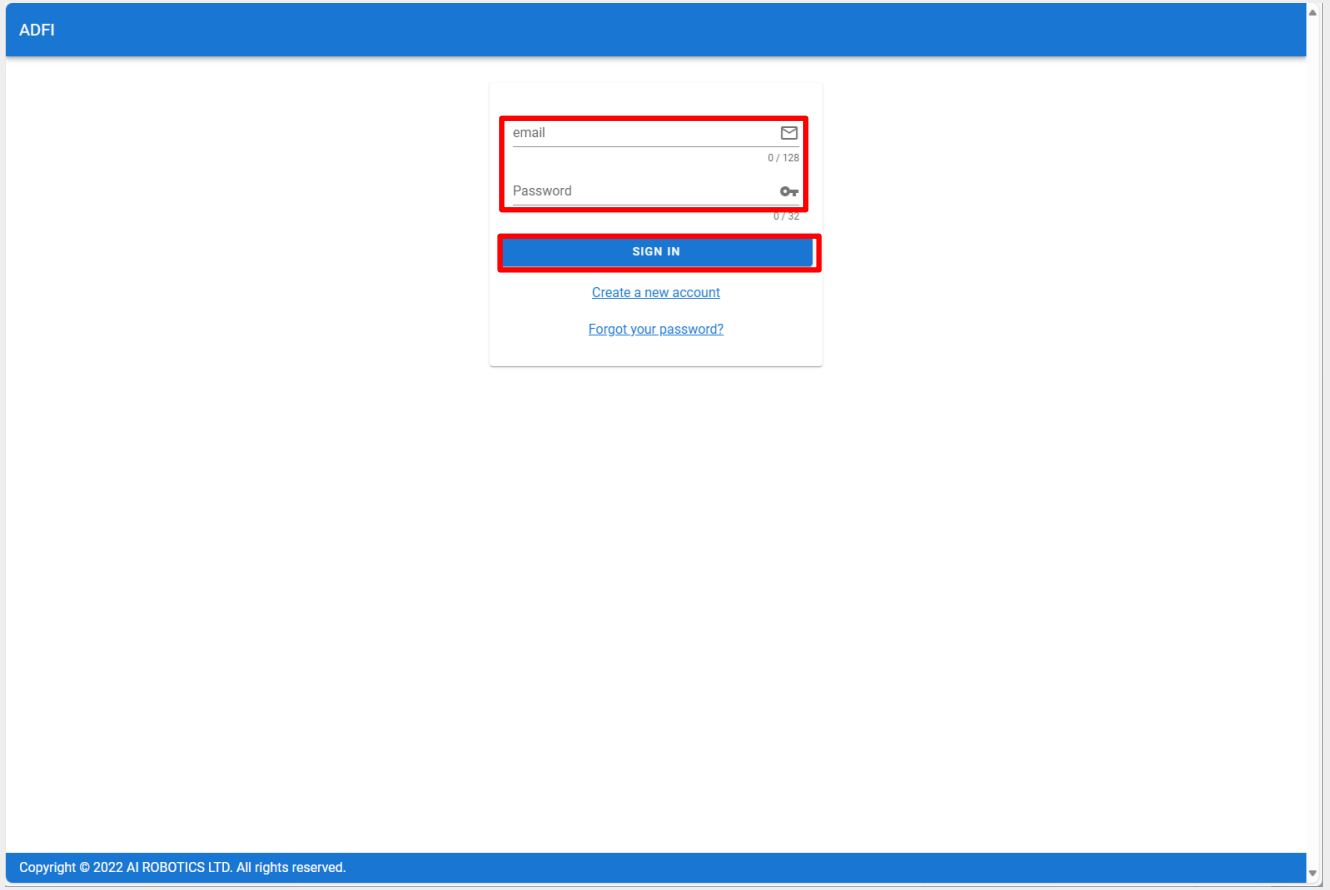


Create your account (for the first time only)

7. You will receive a confirmation email from ADFI (info-web@airobotics.jp) titled "ADFI Please Confirm Your E-mail Address", so click on the URL in the body of the email.
    - By clicking the URL, you will be able to sign in with the email address and password you entered earlier.
    - If you do not receive the email, it may have been sorted into your spam box or you may have entered an incorrect email address, so please check.

Create your account (for the first time only)

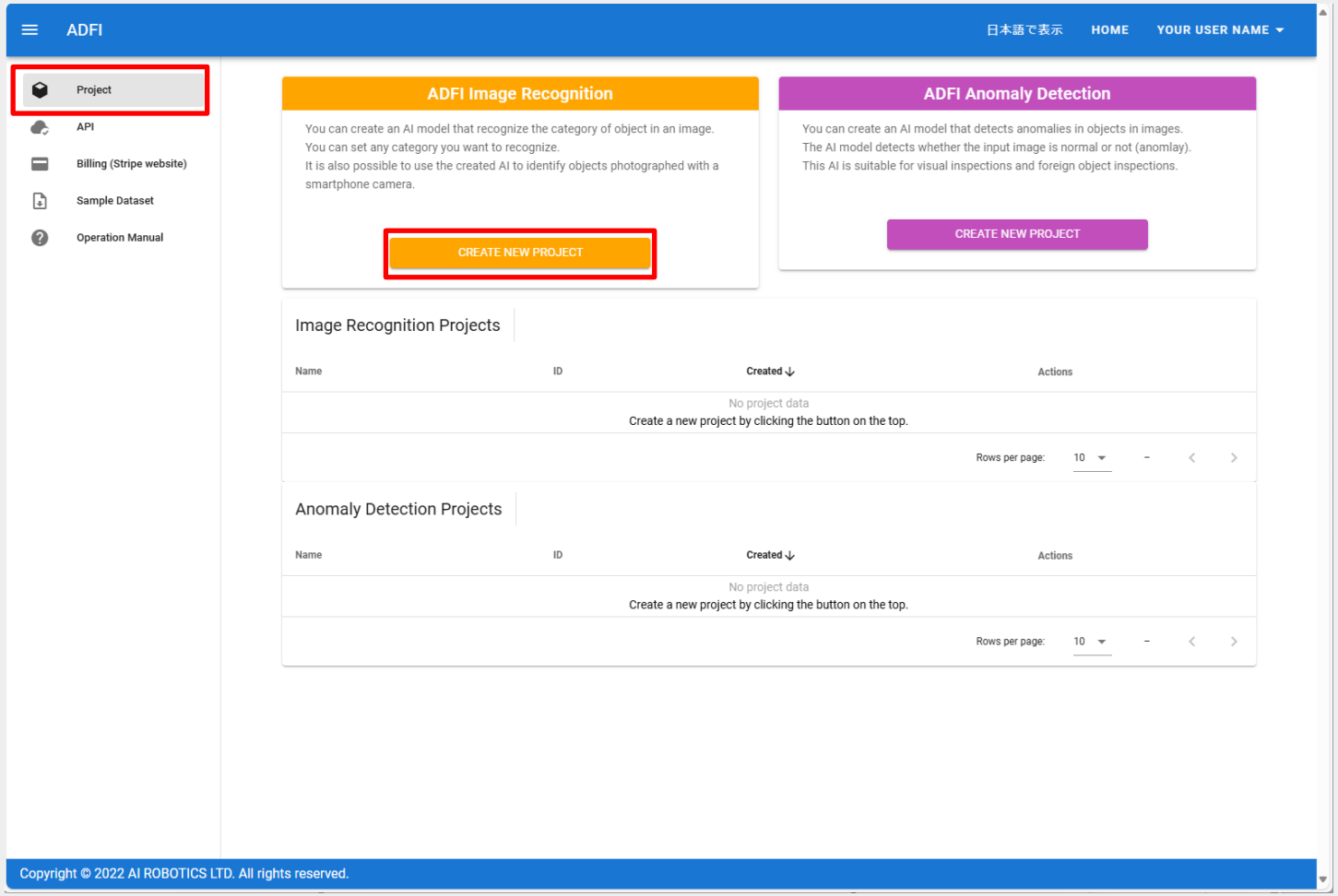
8. Filling out your email address and password, choose **SIGN IN**.



2. Create an image recognition AI

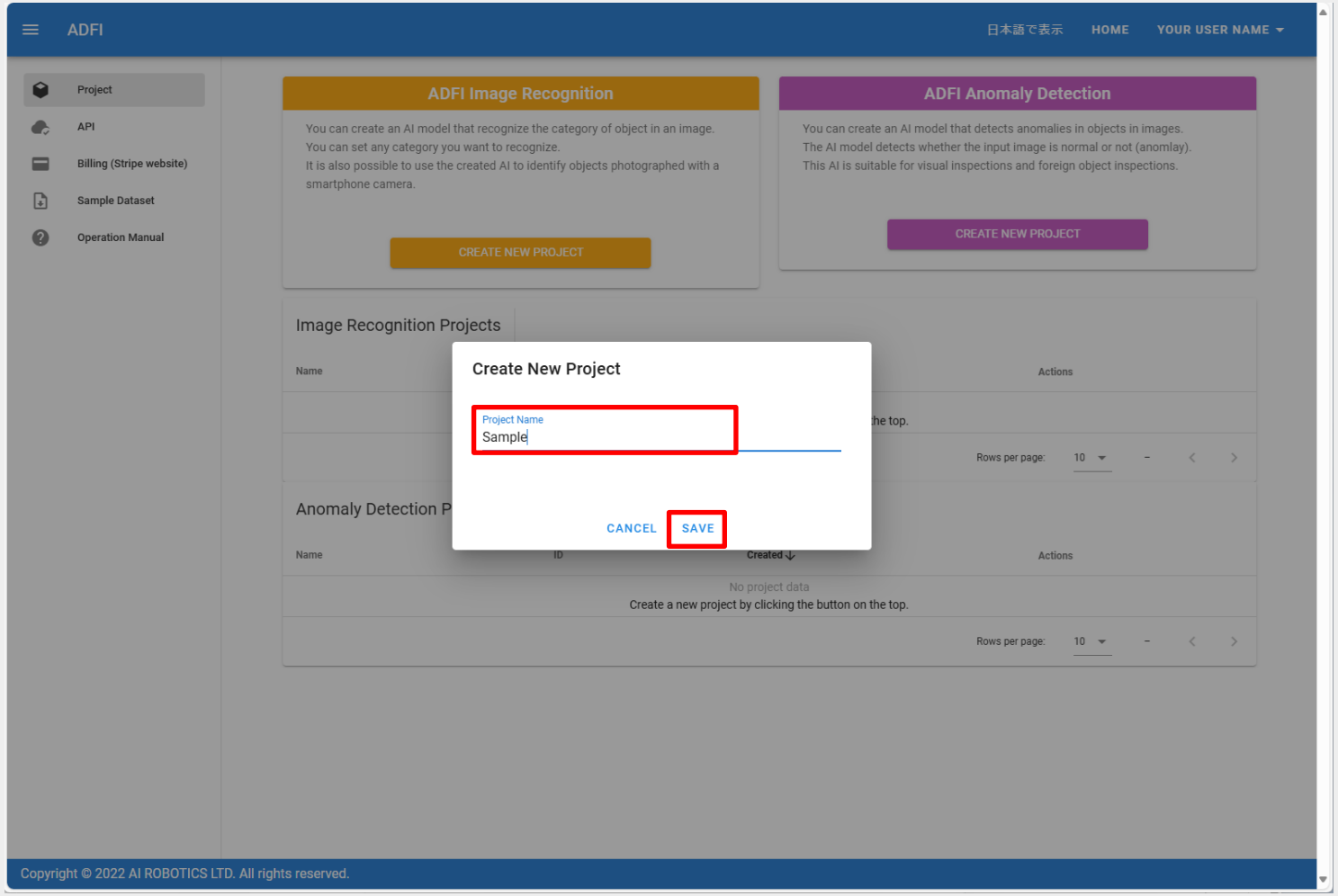
Create an image recognition AI

1. To create a project.
   In the navigation pane at the left of the screen, you can select **Project** .
2. We display the AI menu of the project.
   Choose the **CREATE NEW PROJECT** of ADFI Image Recognition.



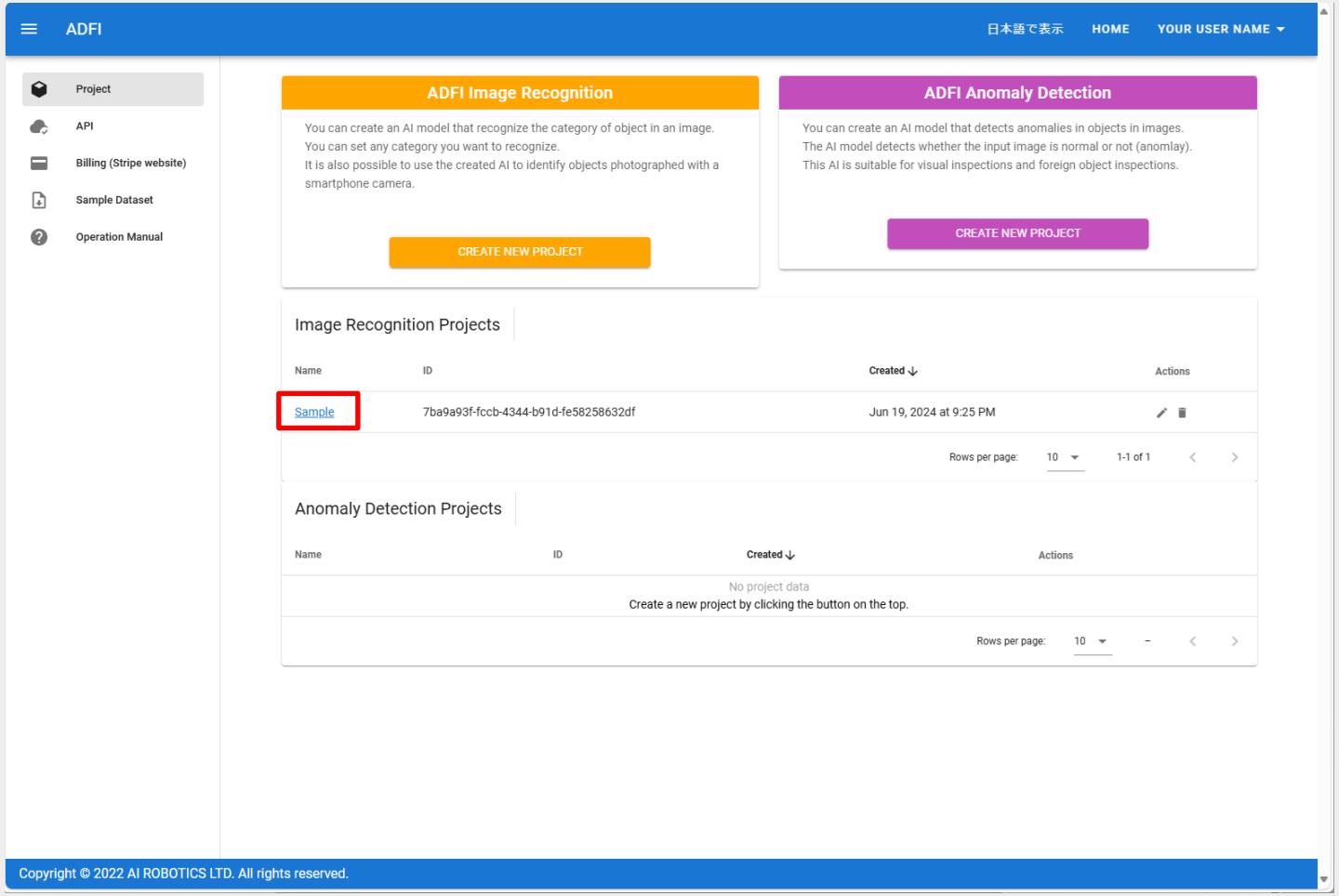
Create an image recognition AI

3. Under **Project Name**, enter any name.
4. Press the **SAVE** button.



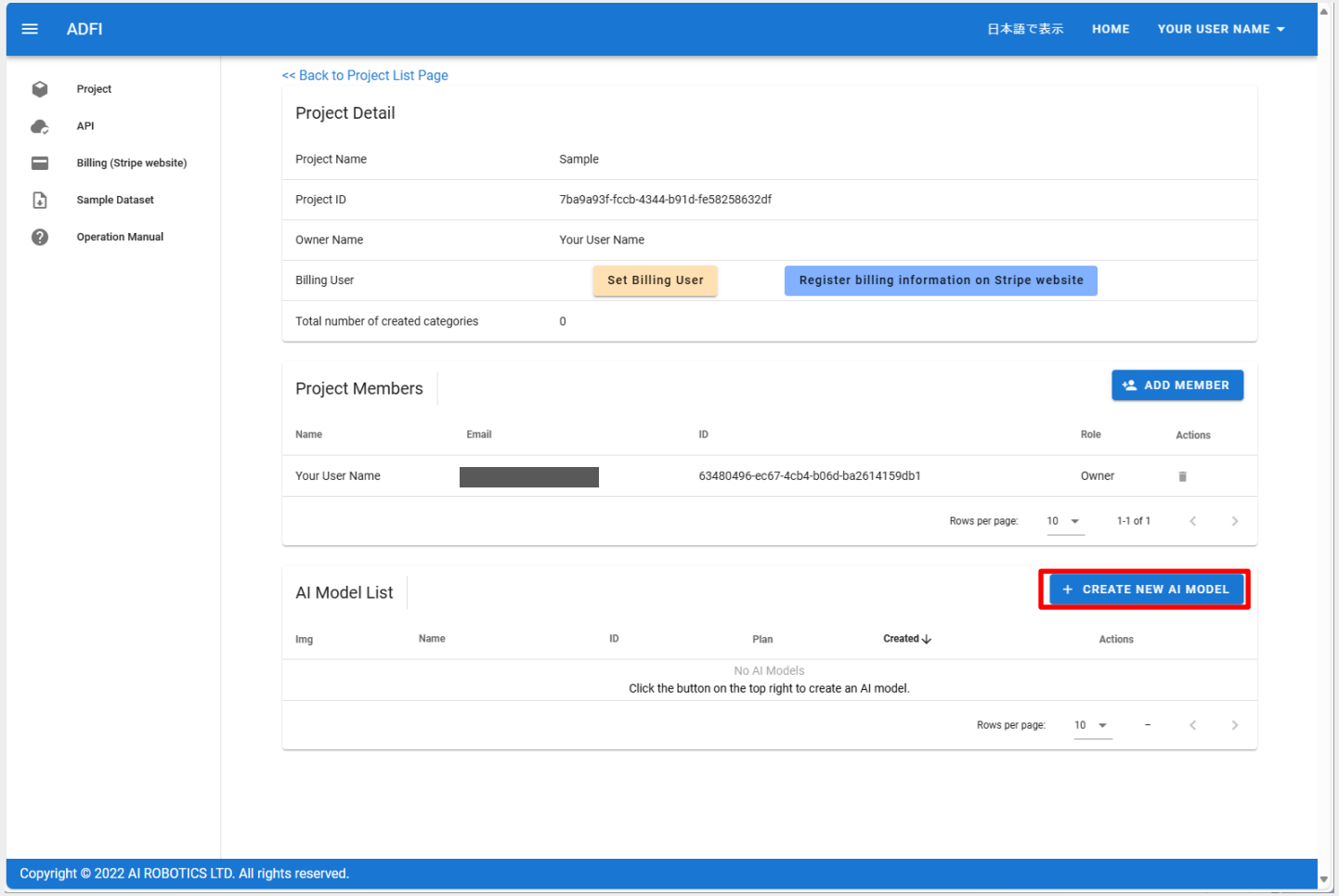
Create an image recognition AI

5. If the project is successfully created, select **the name of the project**.
   We will display the project detail screen.



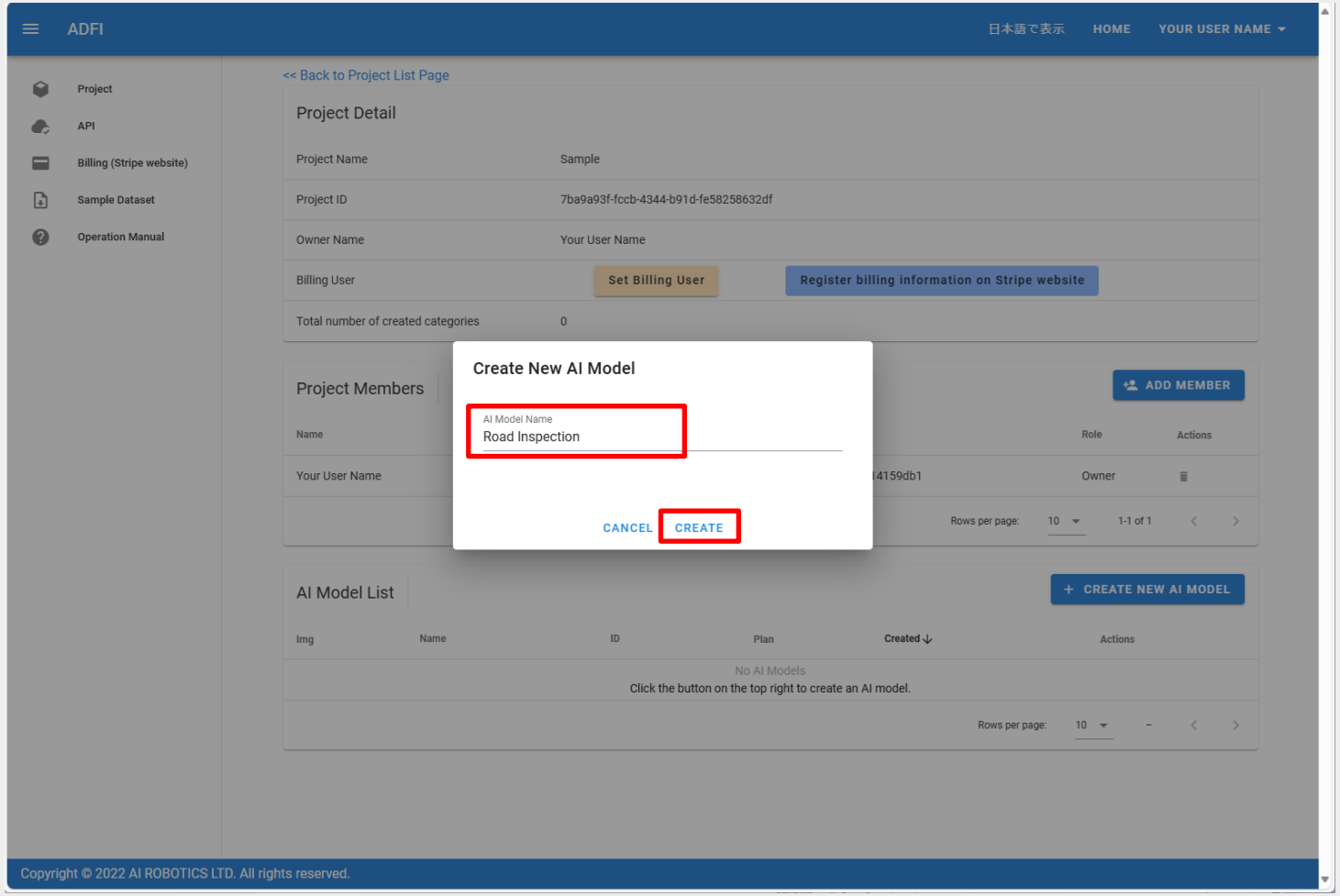
Create an image recognition AI

6. In the project detail screen, you can add project members to the project or create AI model.
   To create an image recognition AI in the project, press **CREATE NEW AI MODEL**.



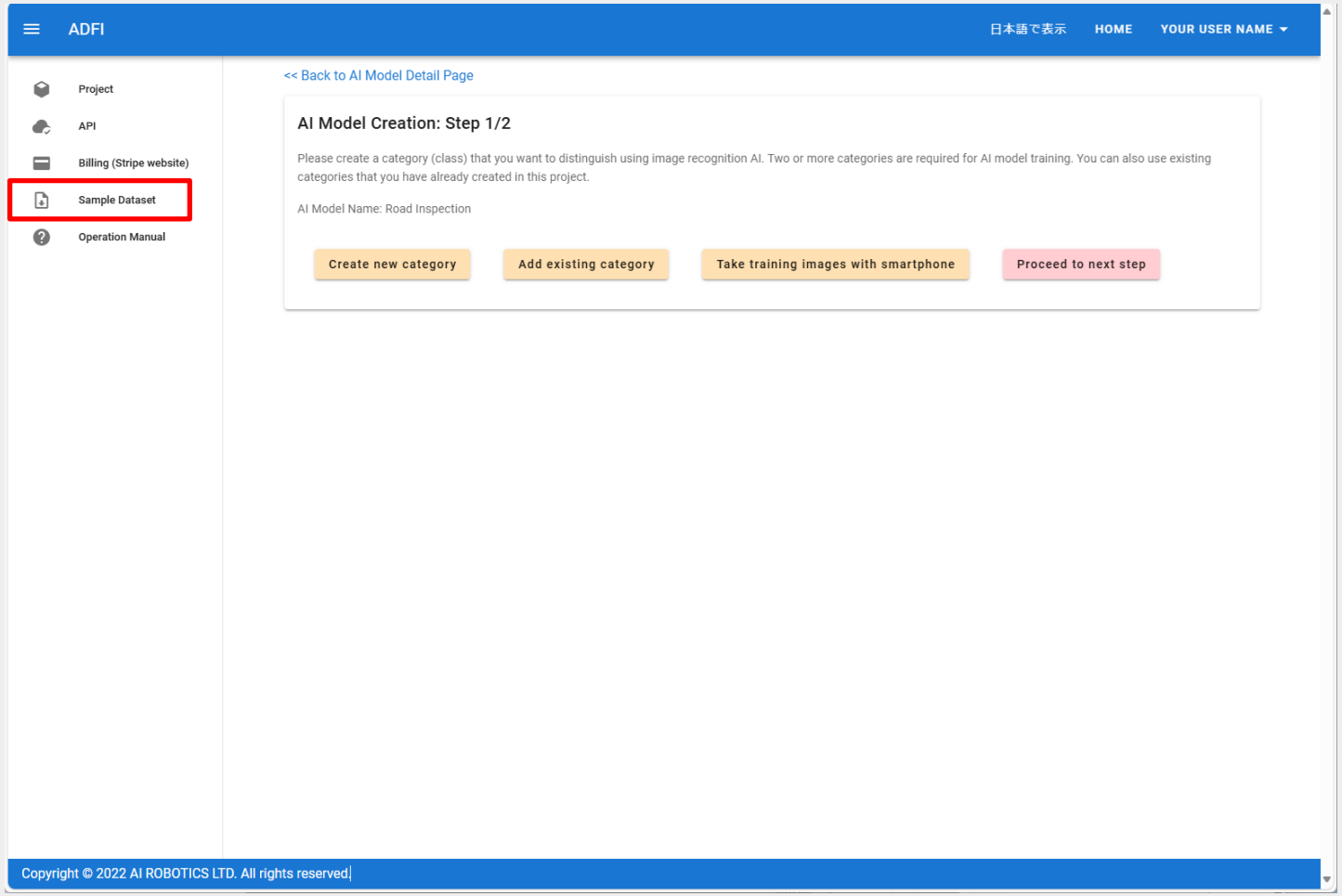
Create an image recognition AI

7. Enter an any AI model name, choose **CREATE**.



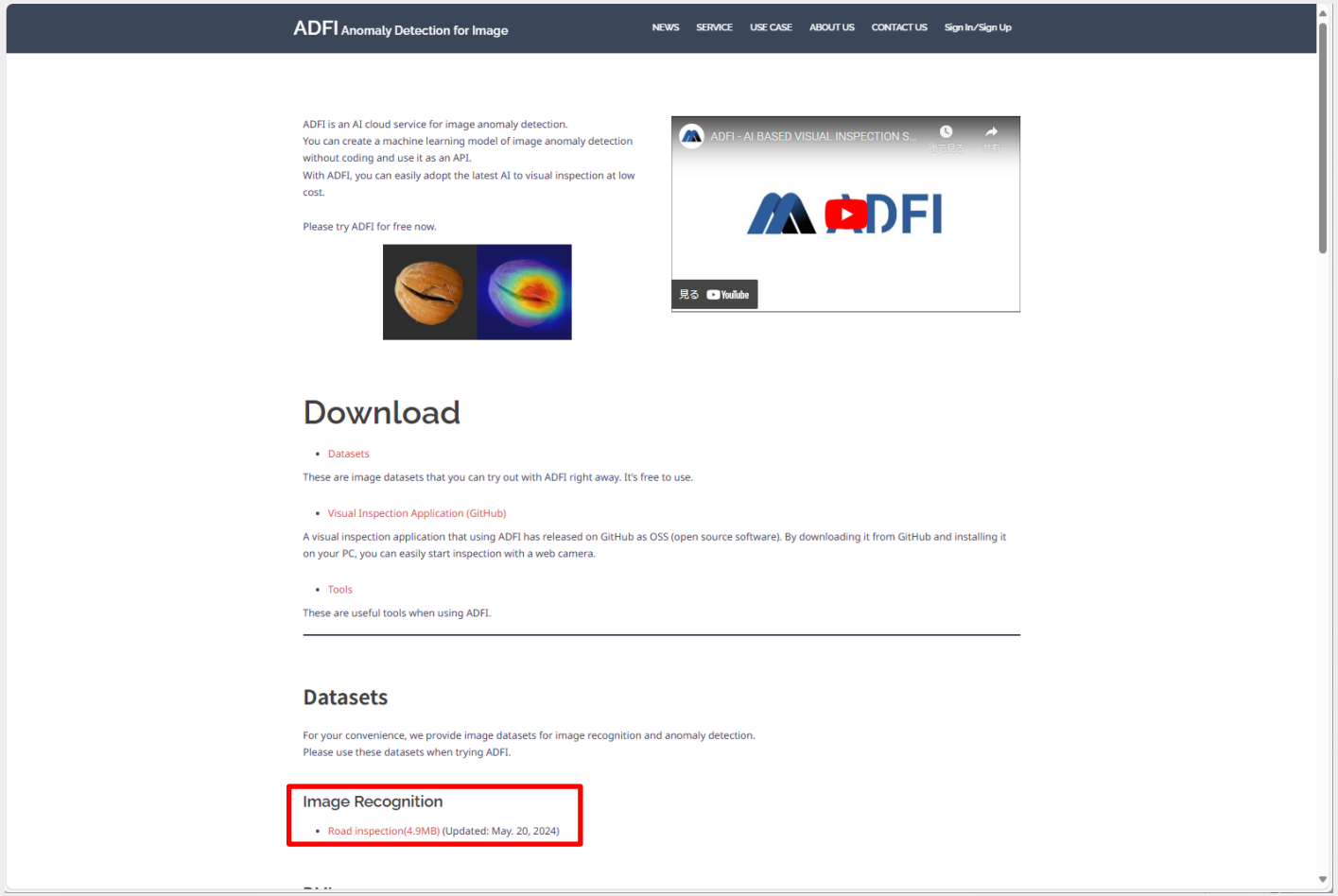
Create an image recognition AI

8. We will display AI Model Creation screen.
   (Optional) If you don't have training data and test data,
   you can download sample dataset in the navigation pane.



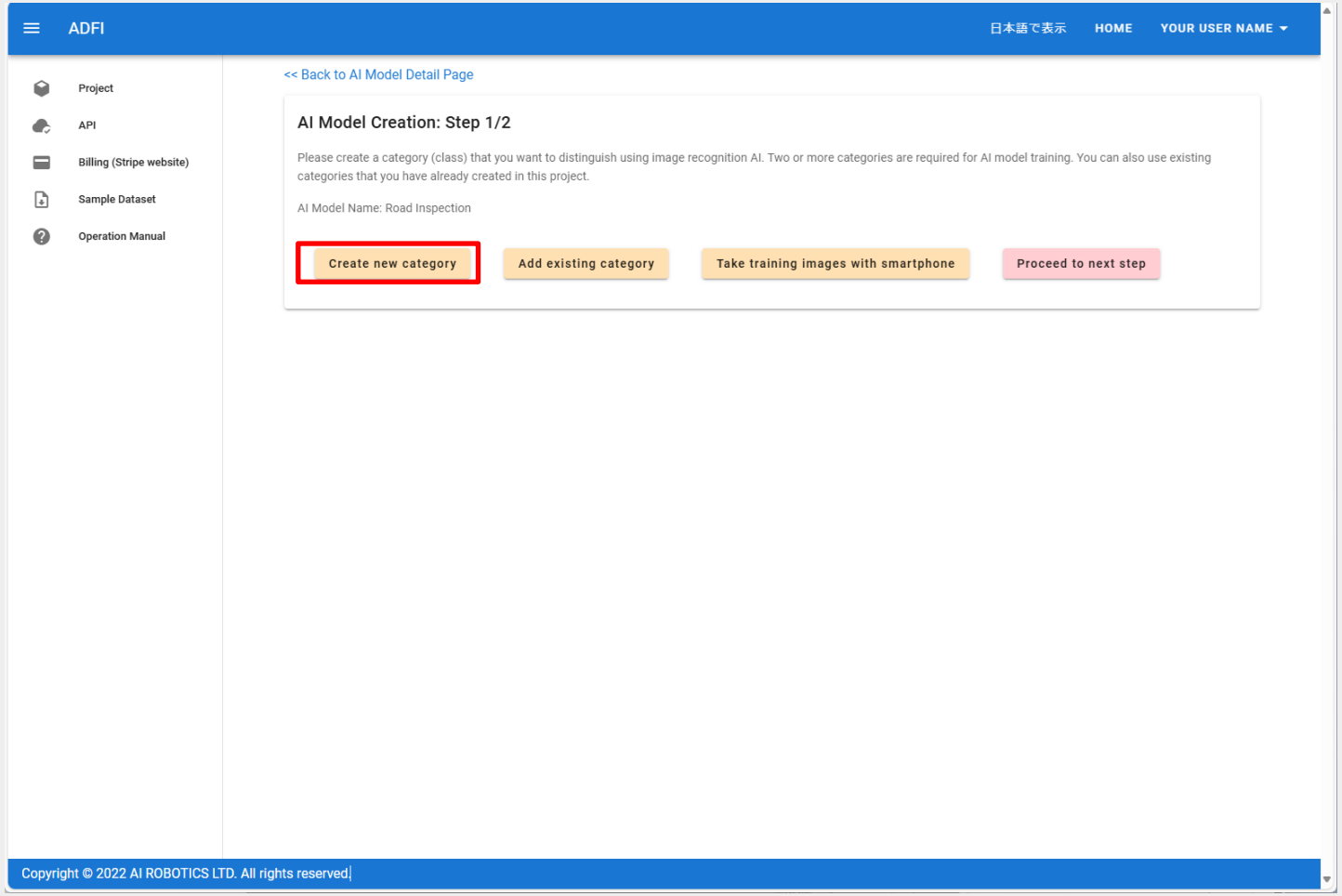
Create an image recognition AI

9. (Optional)
   You can download the **‘Road Inspection**’ dataset from the Download page of the official ADFI website.
   After downloading, unzip the file.



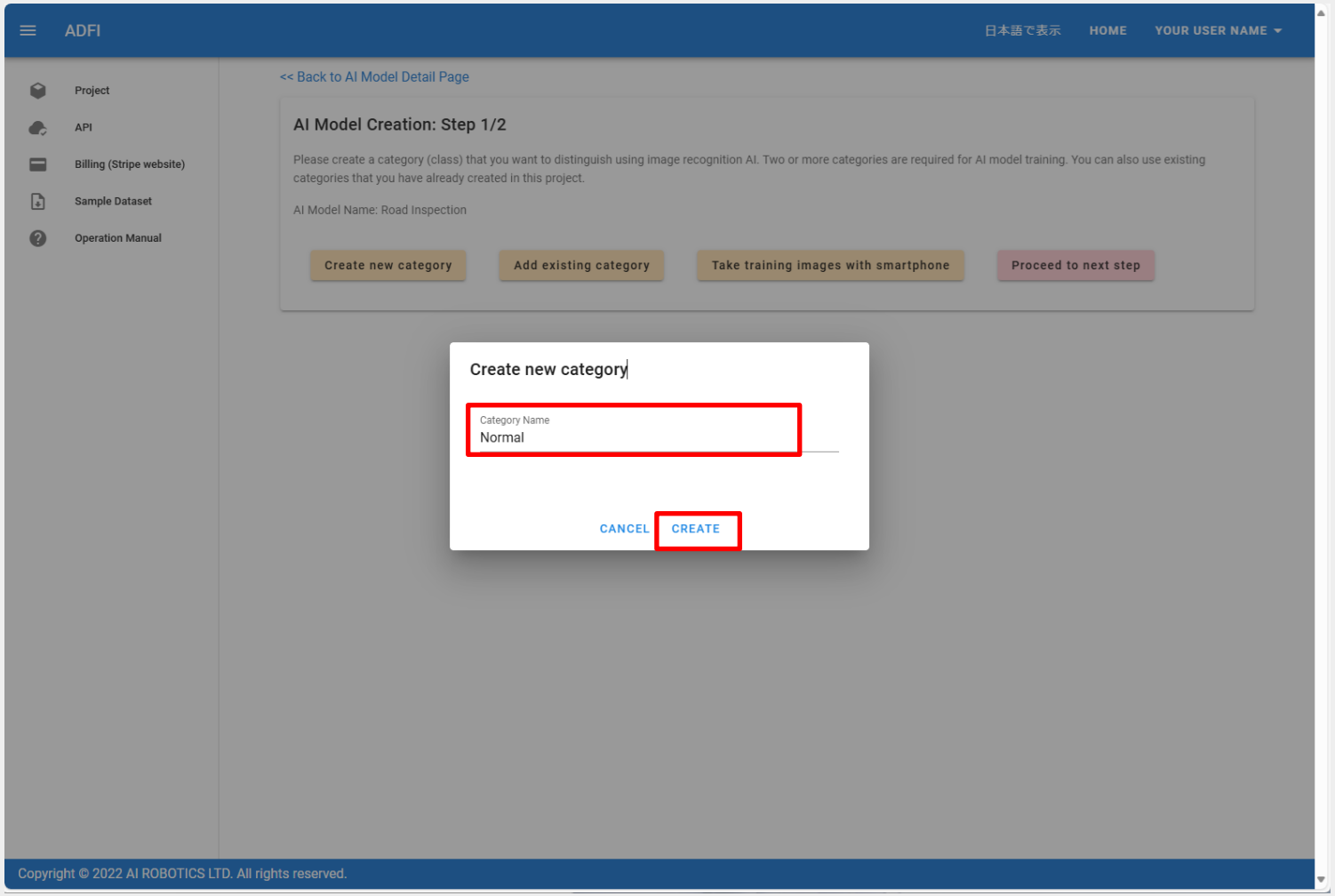
Create an image recognition AI

10. Next, you create the categories AI to identify.
    Choose the **Create new category**.



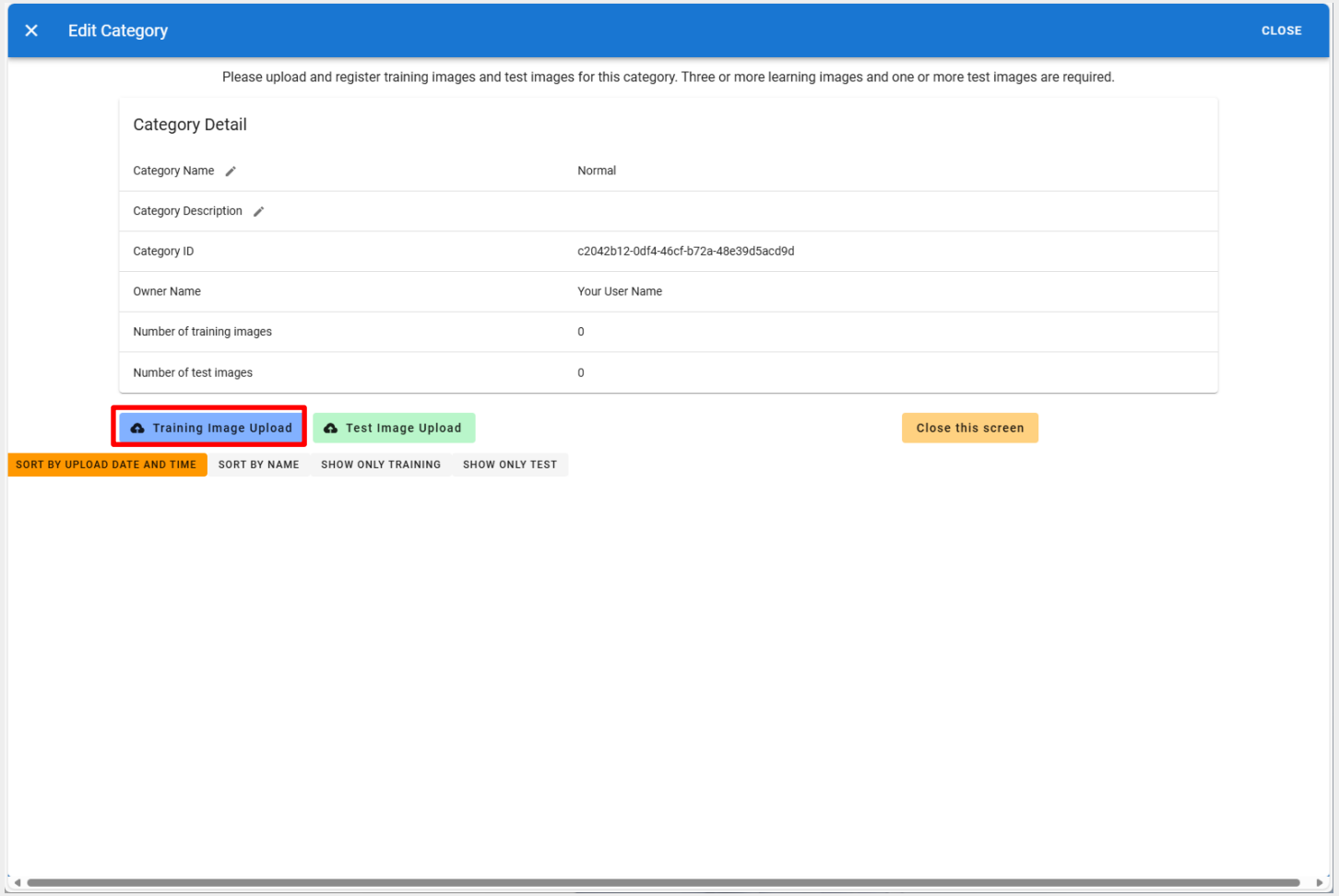
Create an image recognition AI

11. Under **Category Name**, enter any name.
    Press the **CREATE** button.



Create an image recognition AI

12. We will display the Category Detail screen after creating a category.
    On this screen, you can register ‘Training Images’ and ‘Test Images’ .
    Firstly, select **Training Image Upload** to register ‘Training images’ to use for a training AI models.

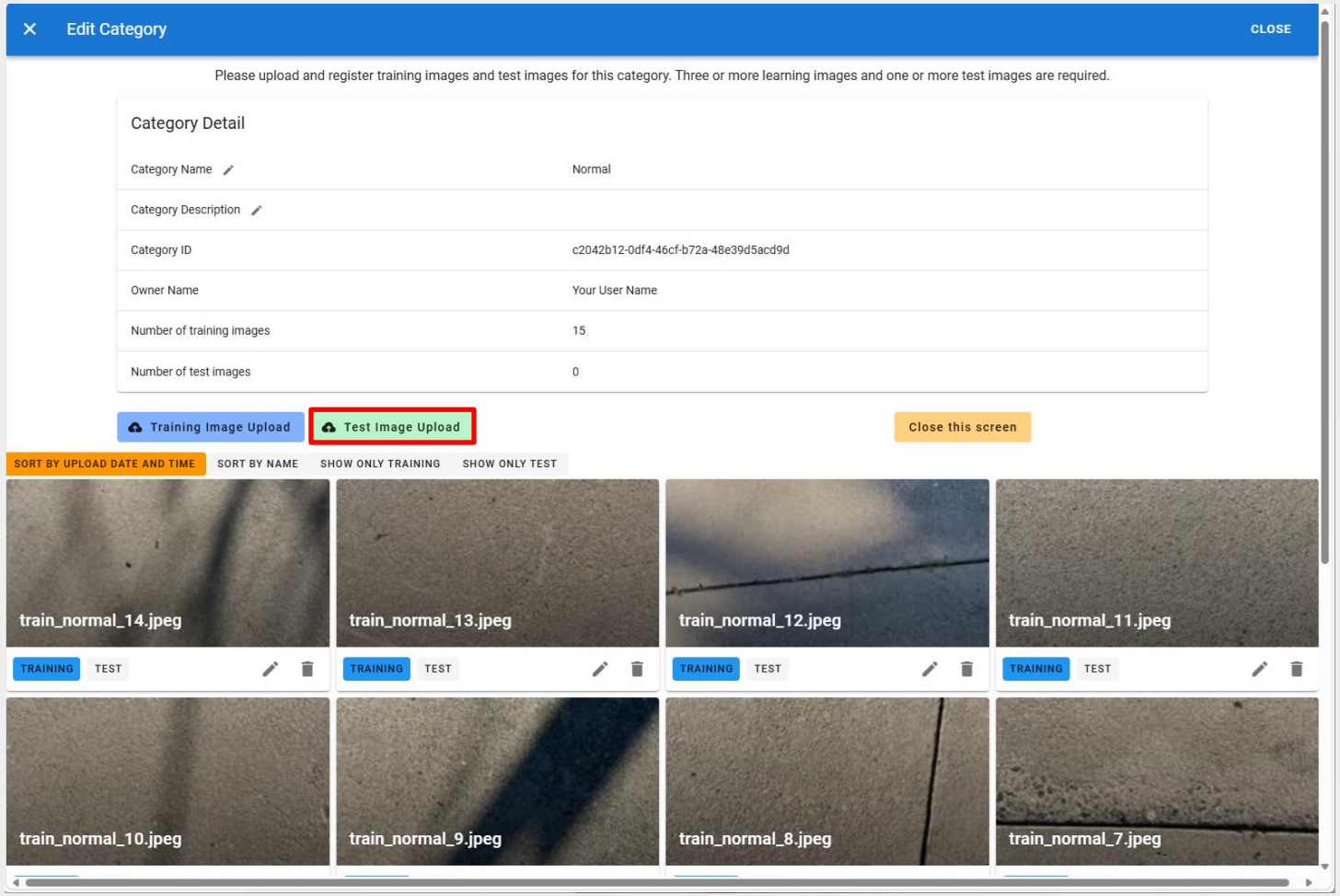


Create an image recognition AI

13. Select the training image you want to upload and press the **Open** button.
    You can select multiple images and upload them at the same time.
    - On Windows, you can select all images in a folder at once by pressing Ctrl + A.
    - The more training images there are, the more likely the AI accuracy will improve. However, the more training images there are, the longer it will take to train.
    - As a guideline, the number of training images should be at least 20 per category.

Create an image recognition AI

14. After uploading, the registered images are displayed at the bottom of this screen.
15. Secondly, select **Test Image Upload** to register ‘Test images’ to measure the accuracy of the created AI models.

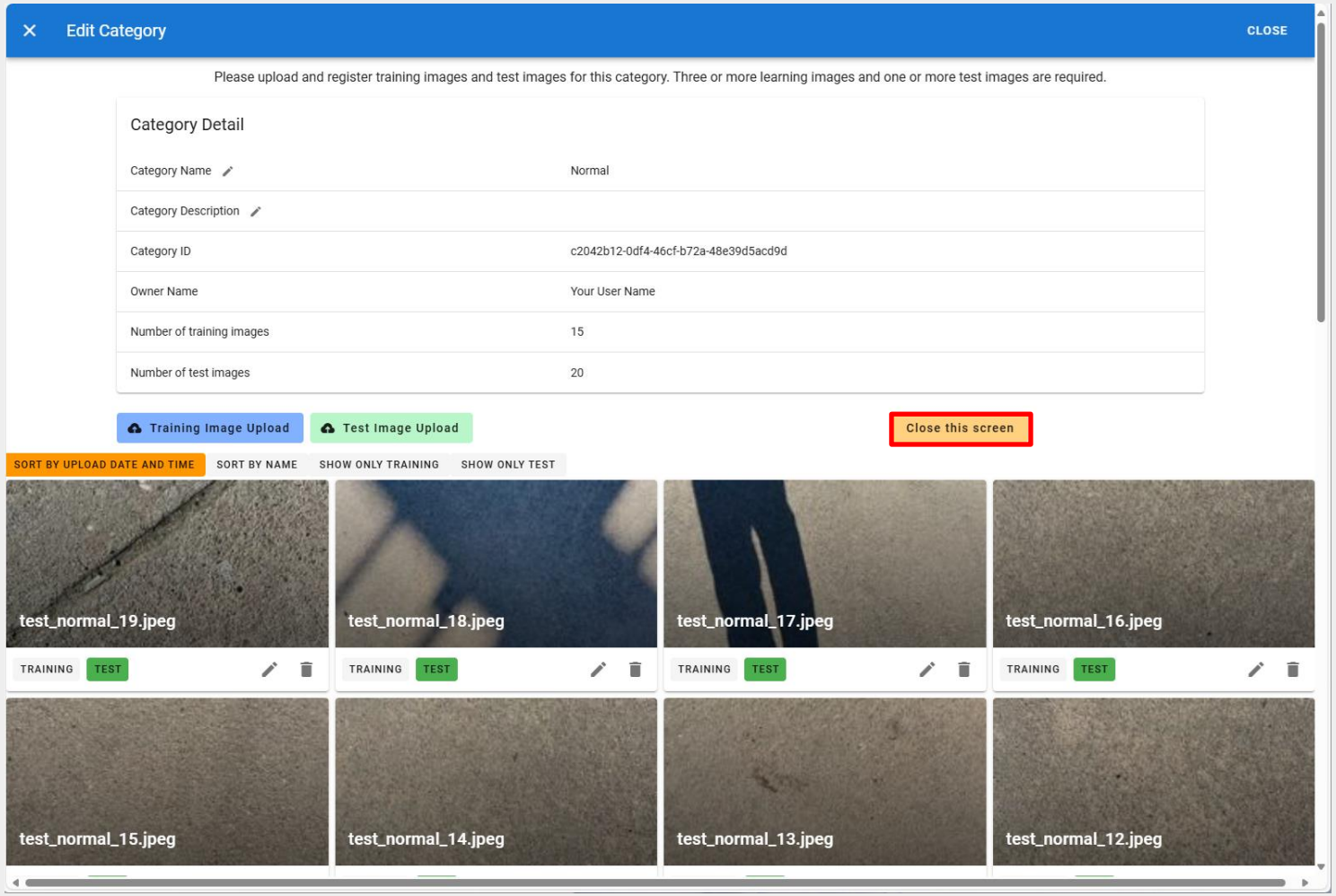


Create an image recognition AI

16. Select the test image you want to upload and press the **Open** button.
    You can select multiple images and upload them at the same time.
    - On Windows, you can select all images in a folder at once by pressing Ctrl + A.

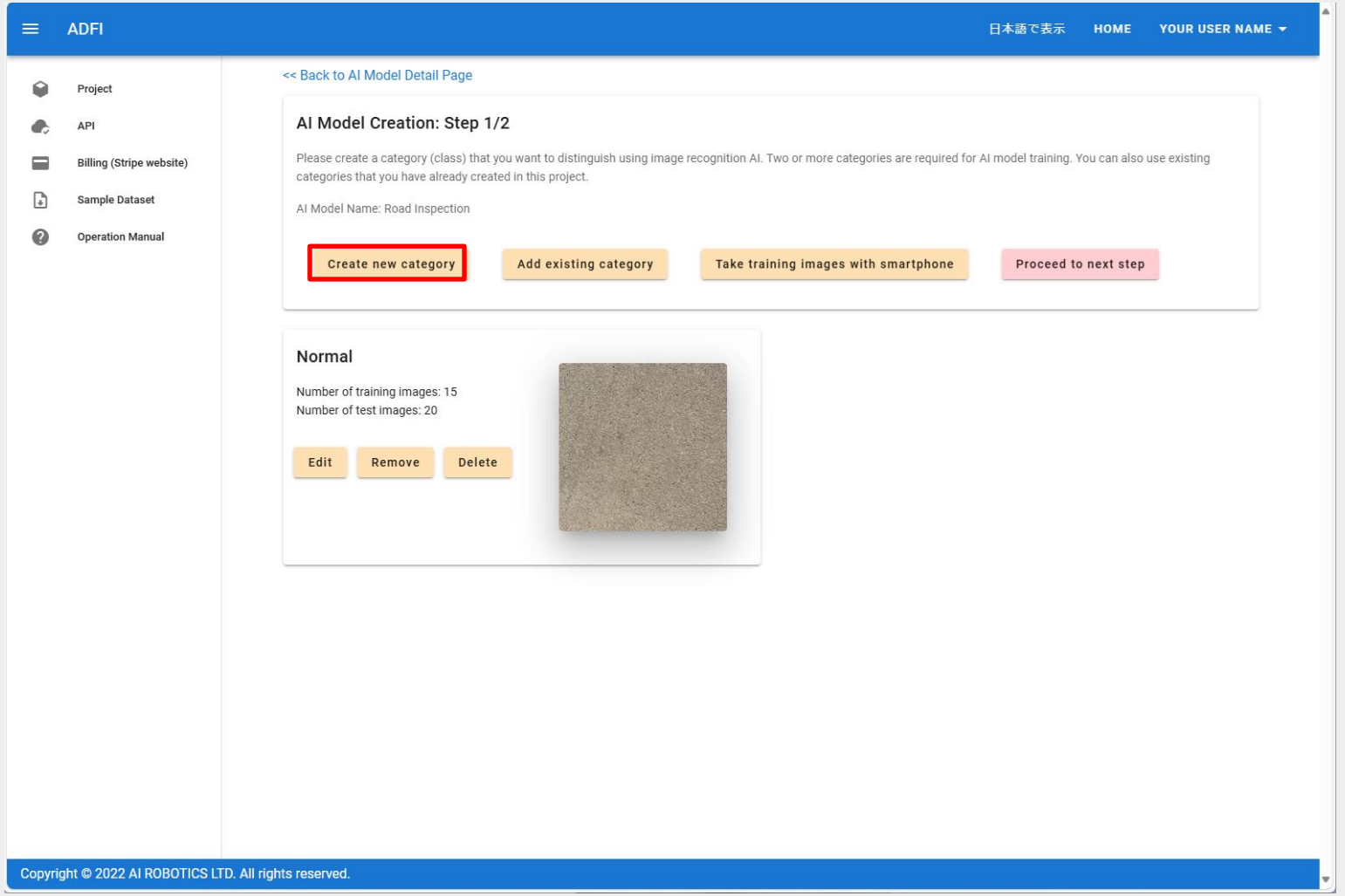
Create an image recognition AI

17. After uploading, the registered images are displayed at the bottom of this screen.
    And you finished creating a category.
18. Press **CLOSE** button at the top right or **Close this screen**.



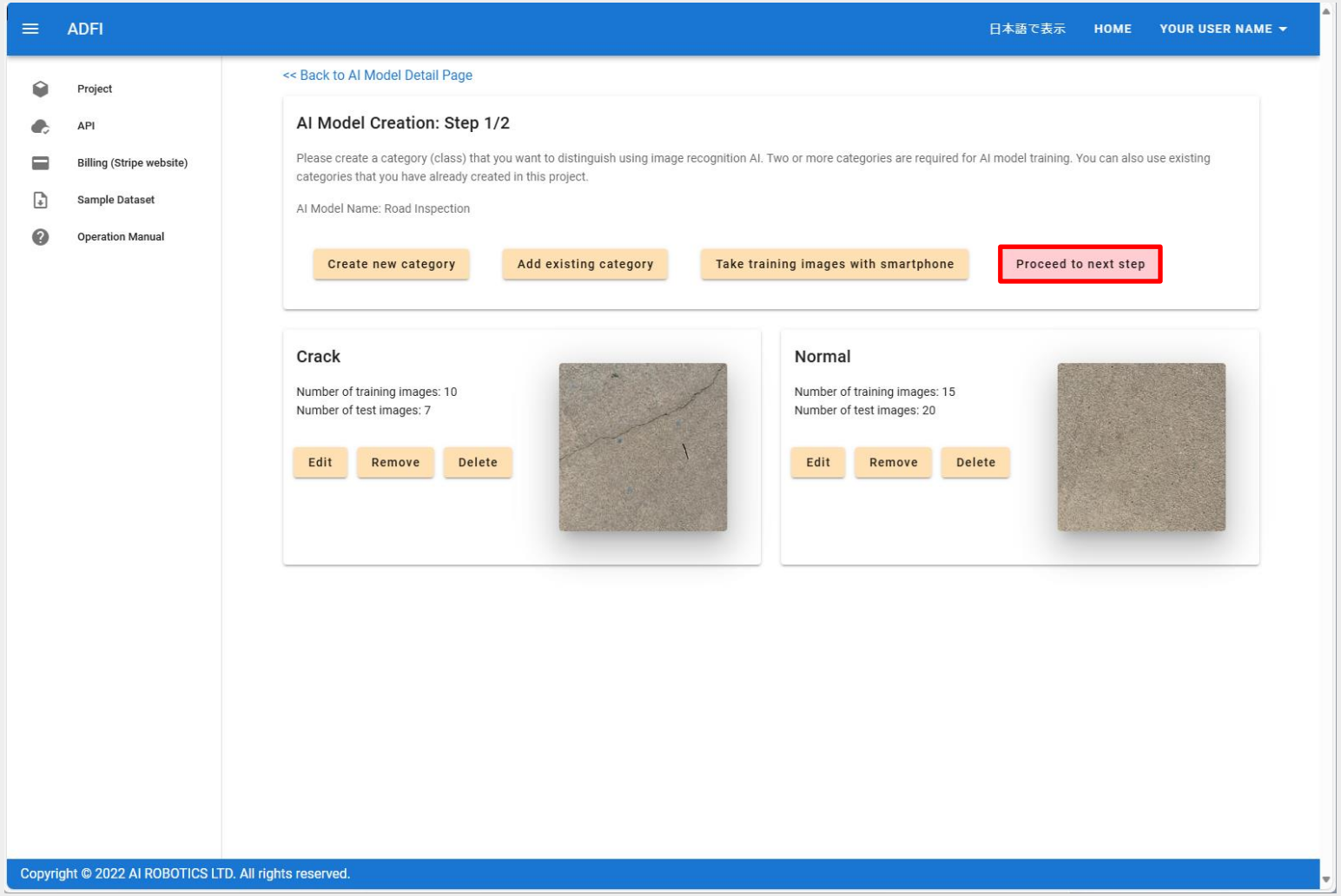
Create an image recognition AI

19. We will display the category you created at the bottom of the screen .
20. (Optional) If you want to add another category AI to identify, repeat steps 10 to 18.



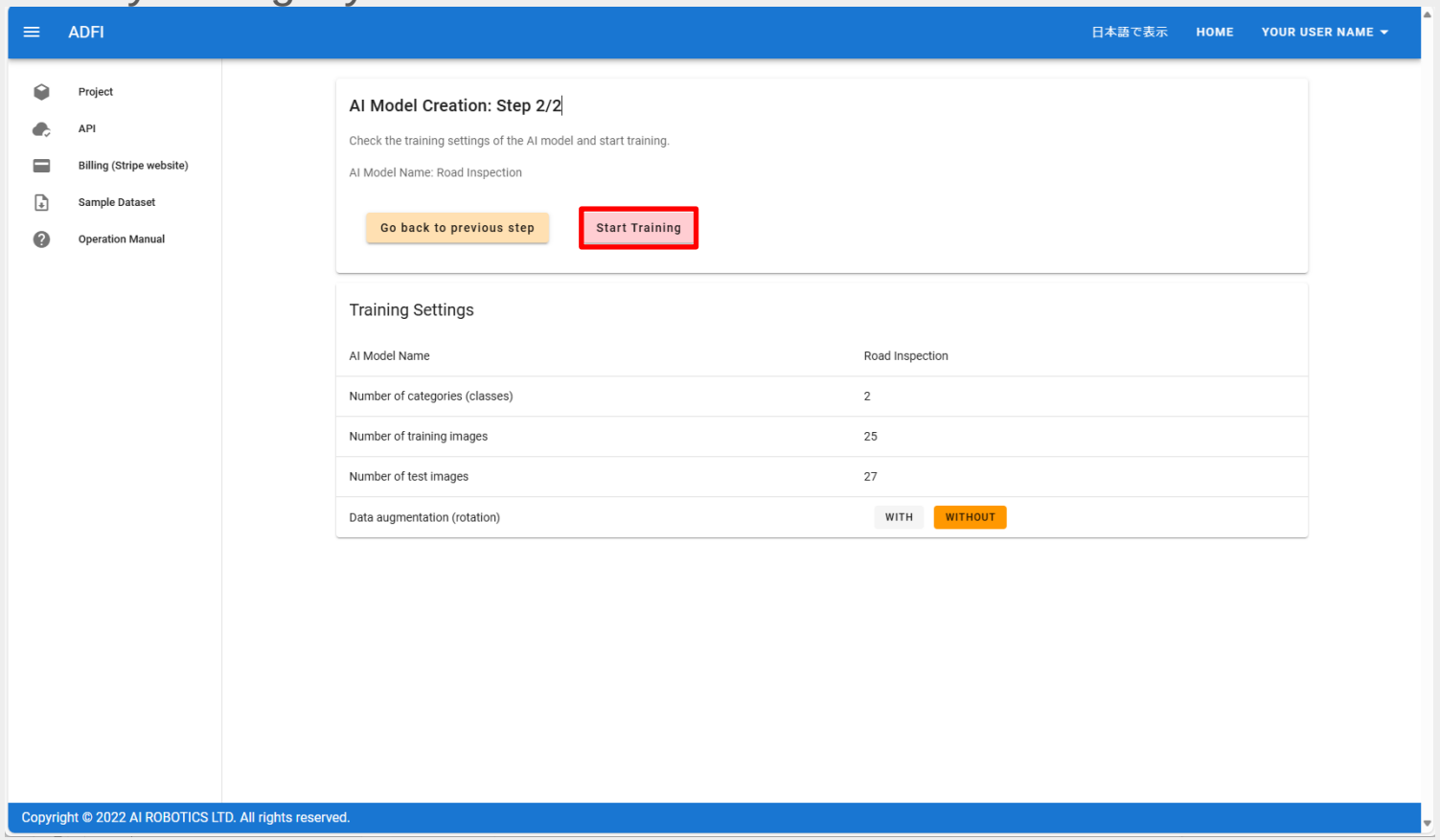
Create an image recognition AI

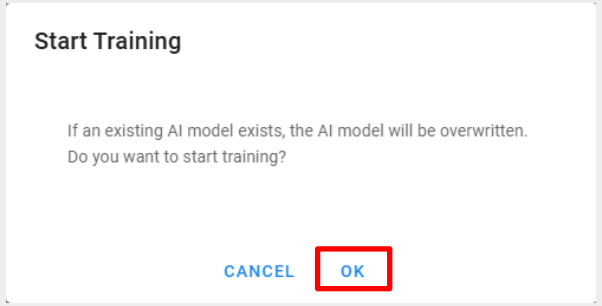
21. Select **Proceed to next step** button after you finished creating all the categories.



Create an image recognition AI

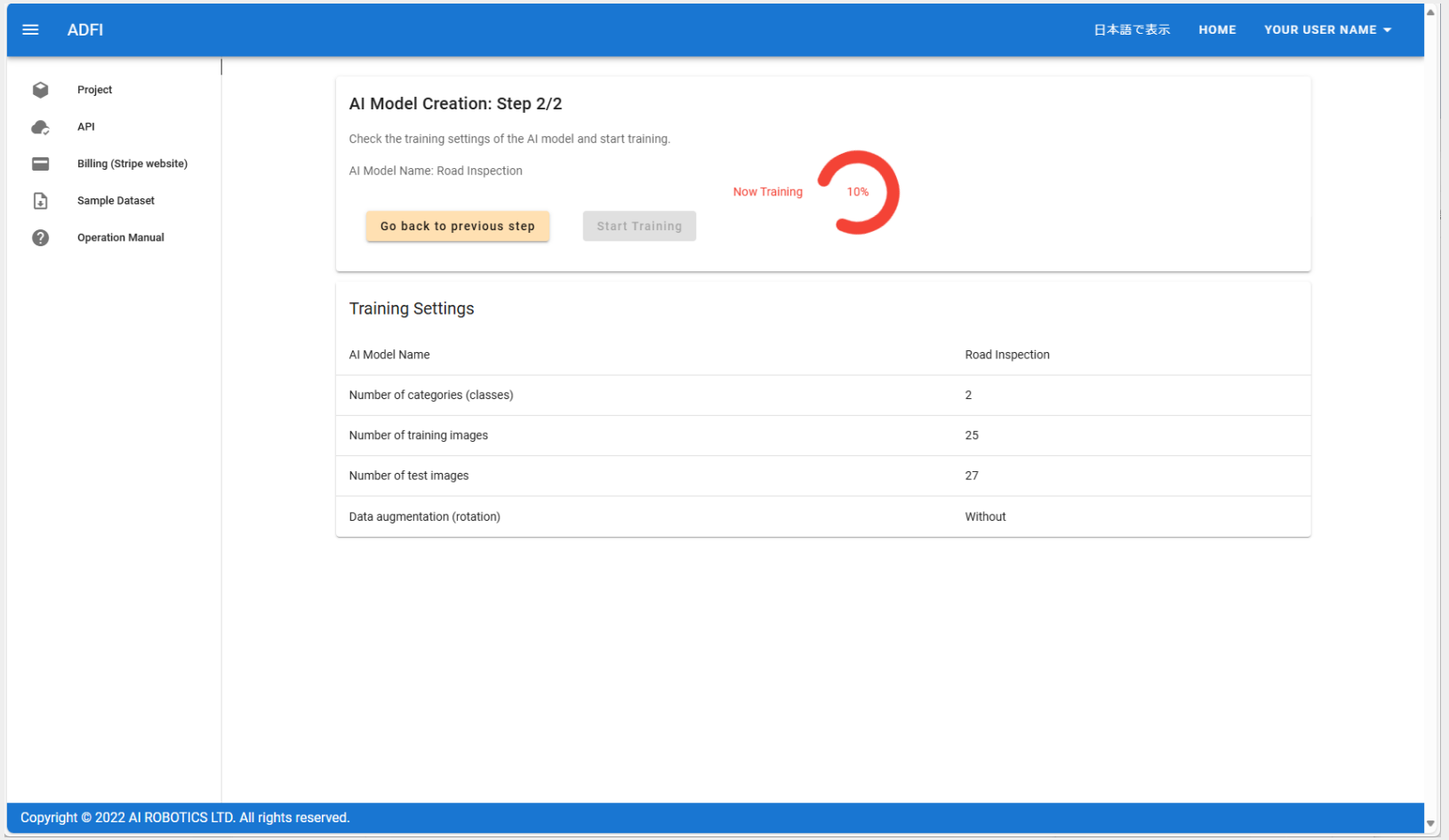
22. We will show registration information you have uploaded the number of images on Training Settings pane.
    If the content is correct, press **Start Training** button to create AI model.
    * If ‘Data augmentation(rotation)’ is set to ‘WITH’, AI recognition accuracy is enhanced even when the image is upside-down or left-right reversed. However, the learning time will be longer. In addition, the recognition accuracy for the normal state of the top and bottom and left and right sides of the image may be slightly reduced.





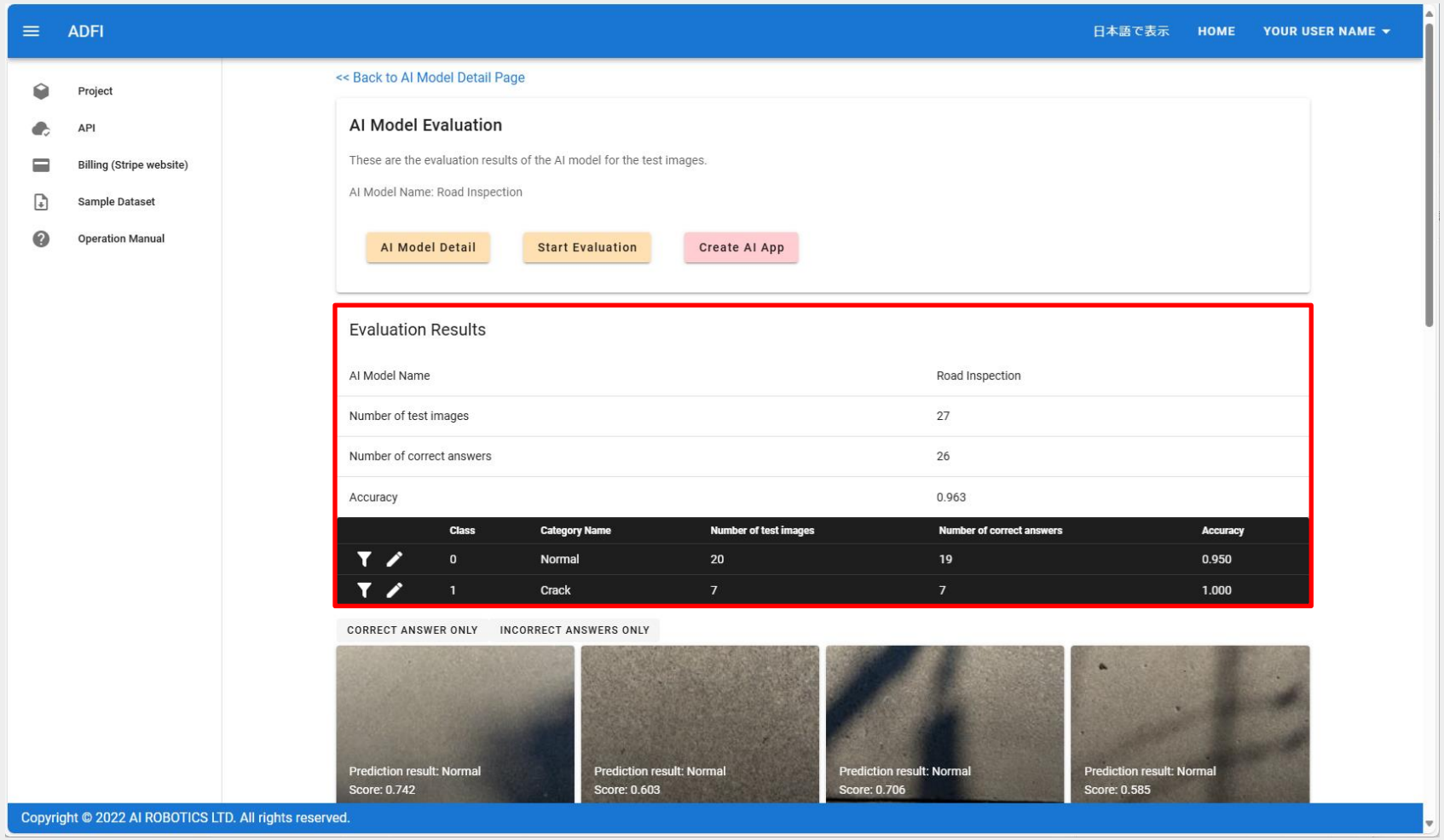
Create an image recognition AI

23. We will display learning status.
    Please wait for a while until the learning process is complete.
    * The length of the learning time is proportional to the number of training images.



Create an image recognition AI

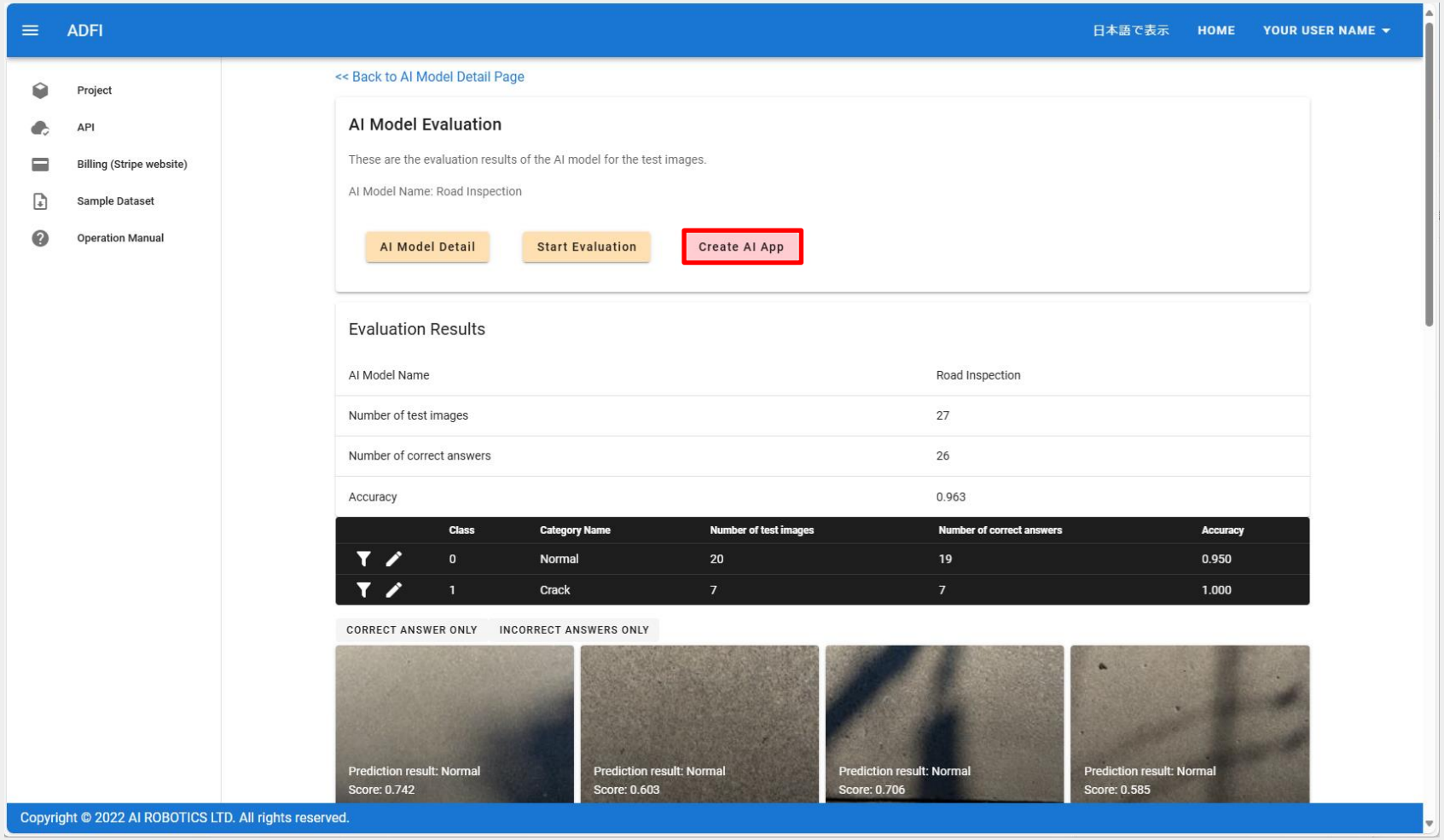
24. After training of the AI model has been completed, AI Model Evaluation screen appears automatically.
    You can check the accuracy of the AI for the entire evaluation image on Evaluation Results pane.
    The AI identification results for each image are displayed at the bottom of the screen.



3. Create an AI app

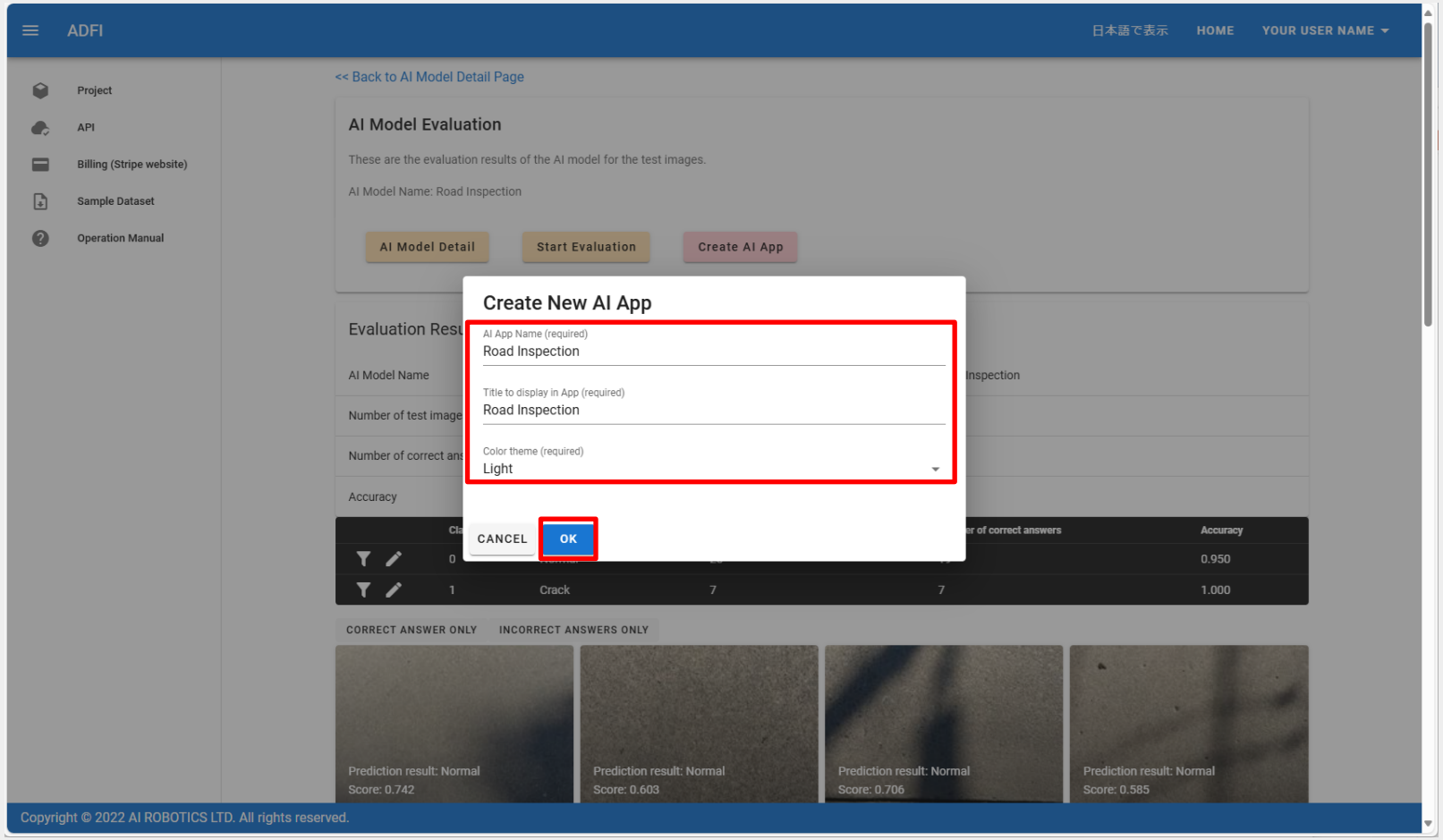
Create an AI app

1. You could have created an image recognition AI in step 2.
   The next step is to create an AI application.
   Press the **Create AI App button** on the AI Model Evaluation pane.



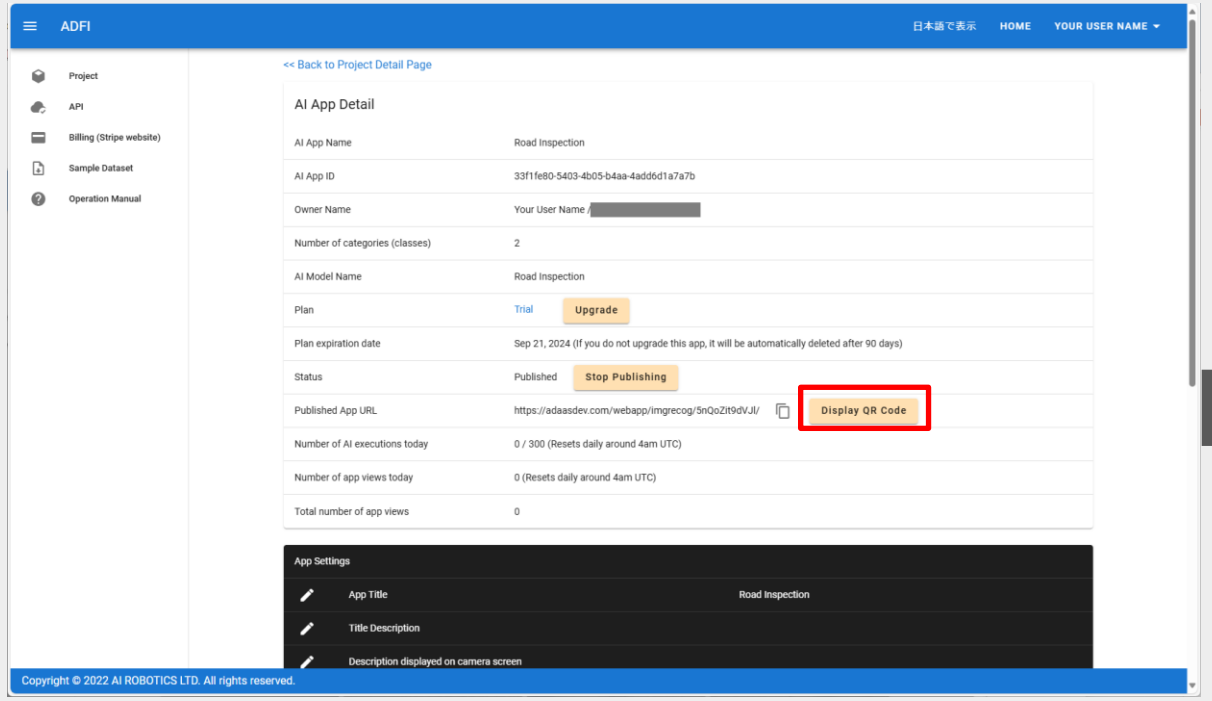
Create an AI app

2. Enter any name under **AI App Name**, **Title to display in App**. And Select **Color theme**.
3. Press the **OK** button.

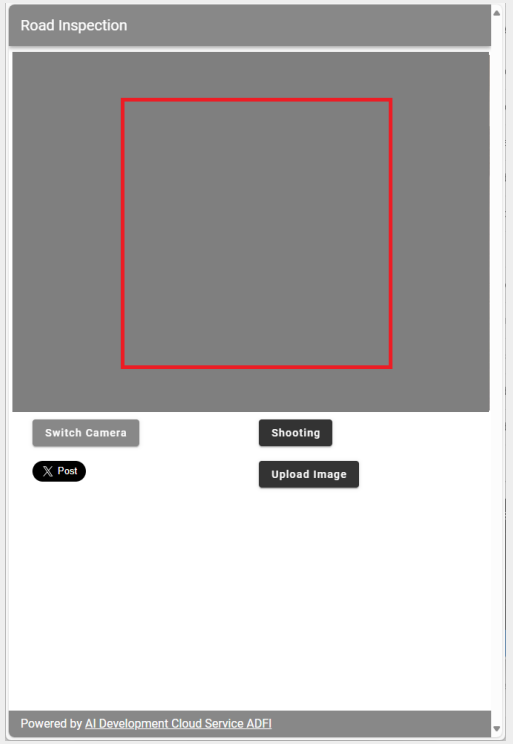


Create an AI app

4. If the AI application is successfully created, select **Display QR Code**.
   We will display a QR code to use the AI application on your smartphone.



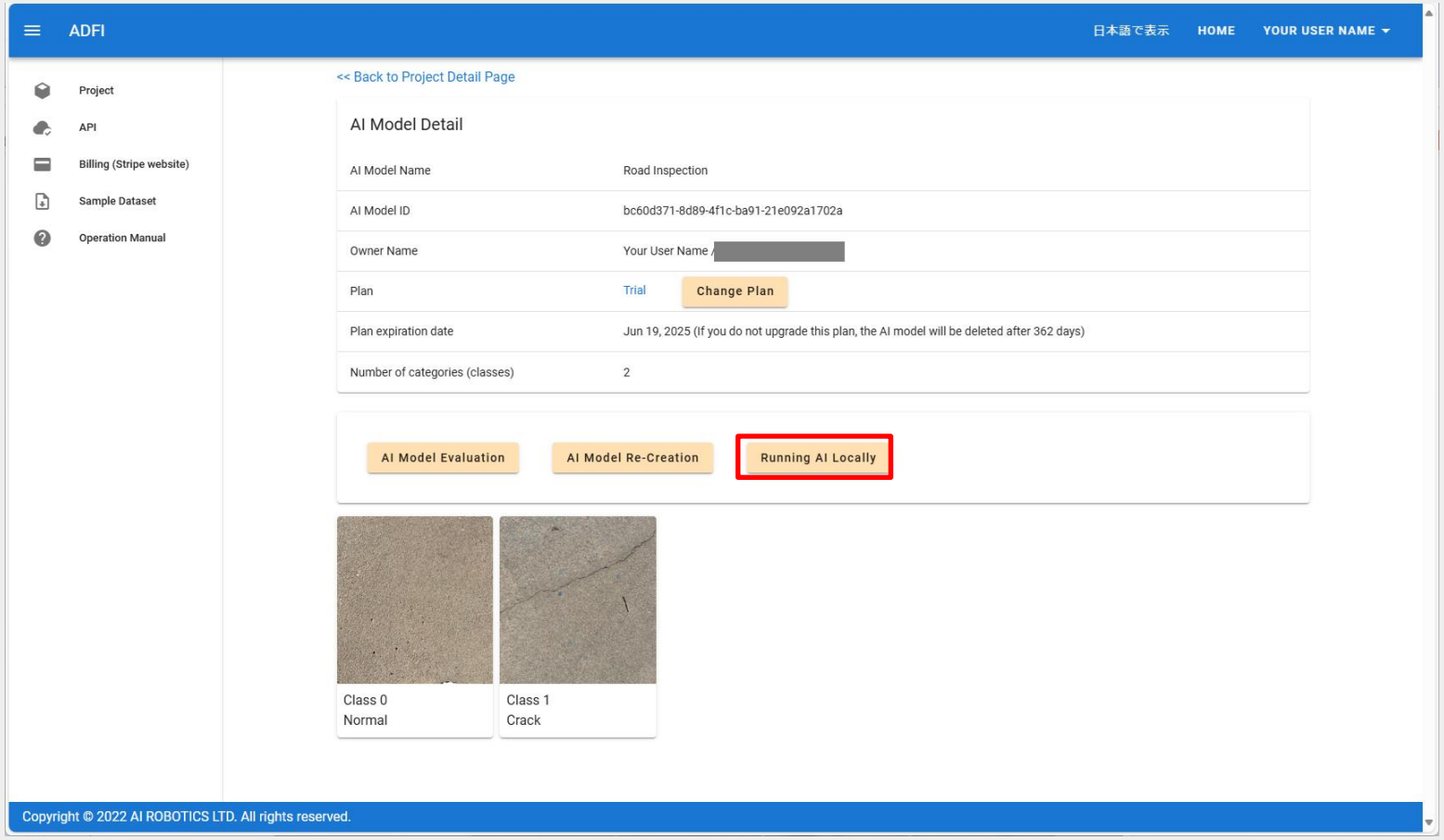
AI App



4. Use image recognition AI in your local environment

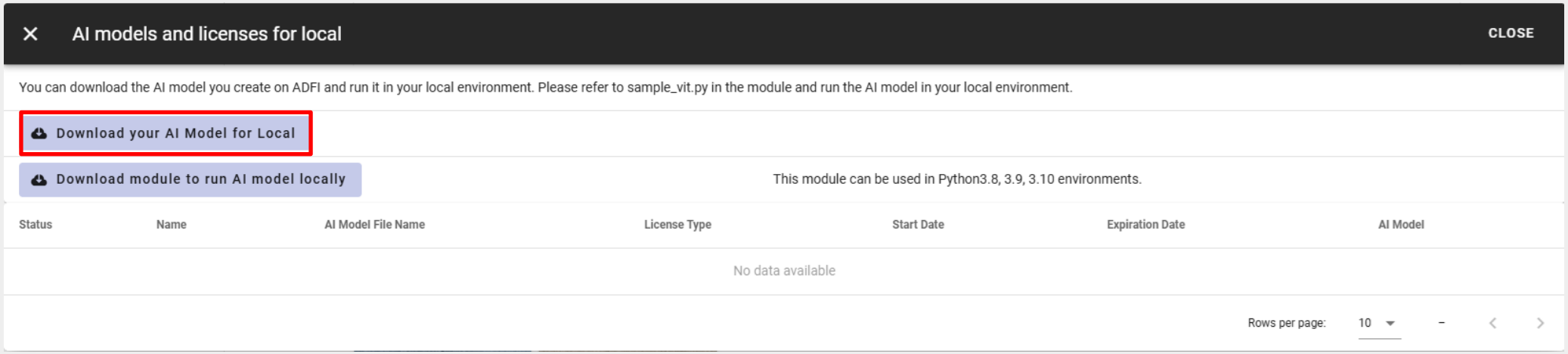
Use image recognition AI in your local environment

1. The AI model created in step 2 can be used in a local environment, such as your own PC or Server. Press the **Running AI Locally** on the AI Model Detail pane.



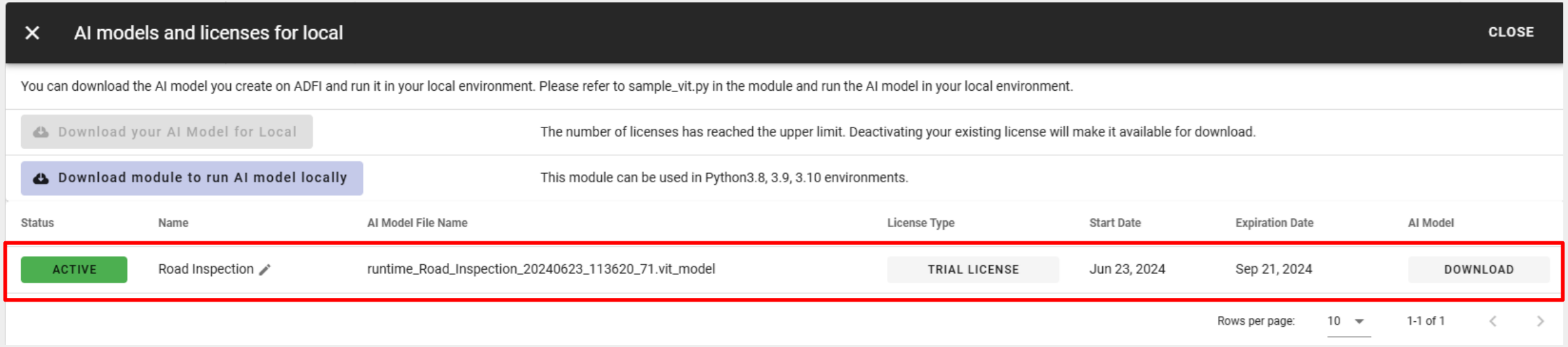
Use image recognition AI in your local environment

2. You can download the AI model.
   We will display ‘AI models and licenses for local’ screen, select **Download your AI Model for Local** button.



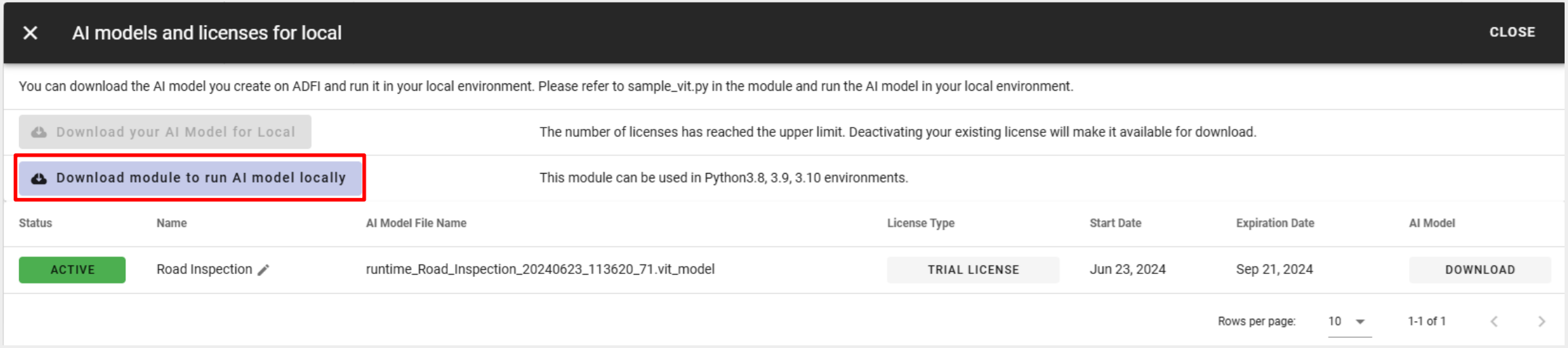
Use image recognition AI in your local environment

3. The local execution license information for the downloaded AI model is displayed at the bottom of the screen.
   You can confirm the status, type and expiry date of your license.
   * By upgrading to a paid plan (local execution plan), the licence type can be changed to 'paid license (auto-renewal)'.

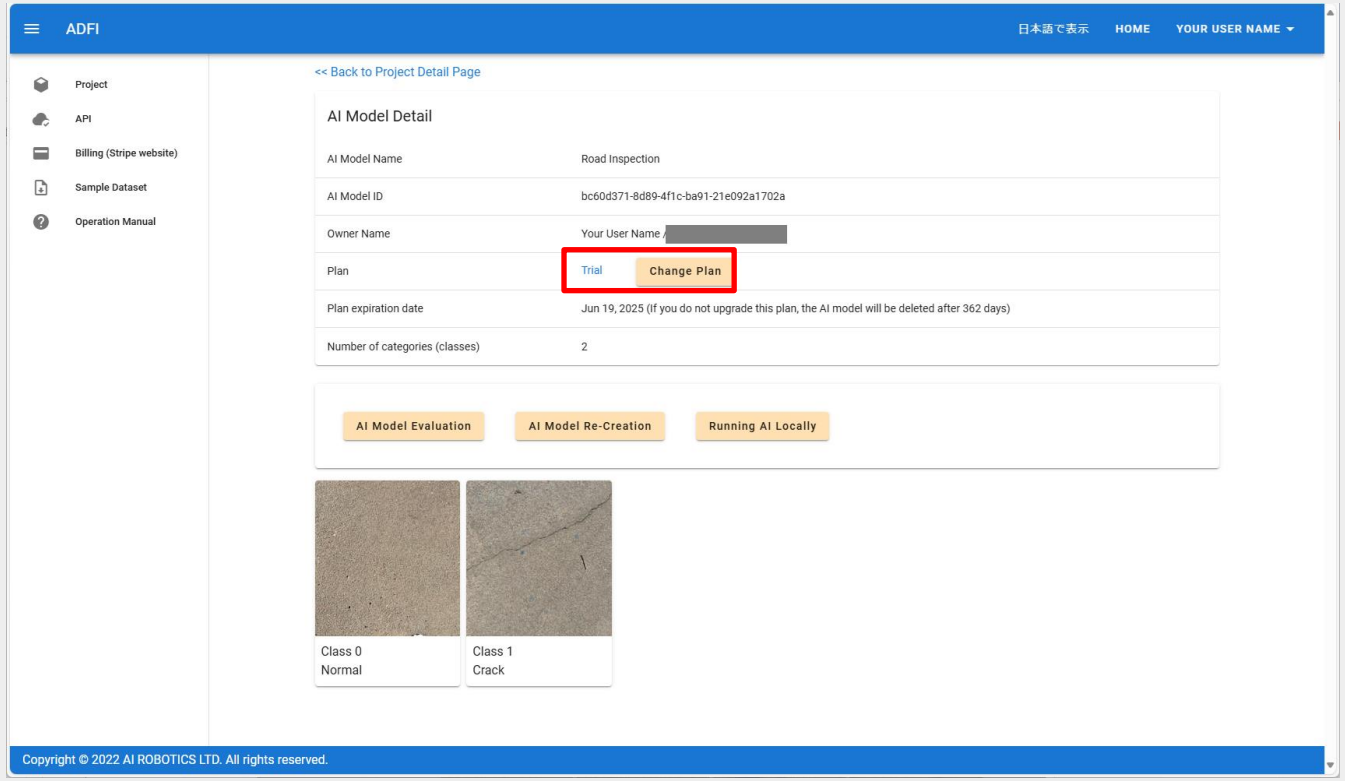
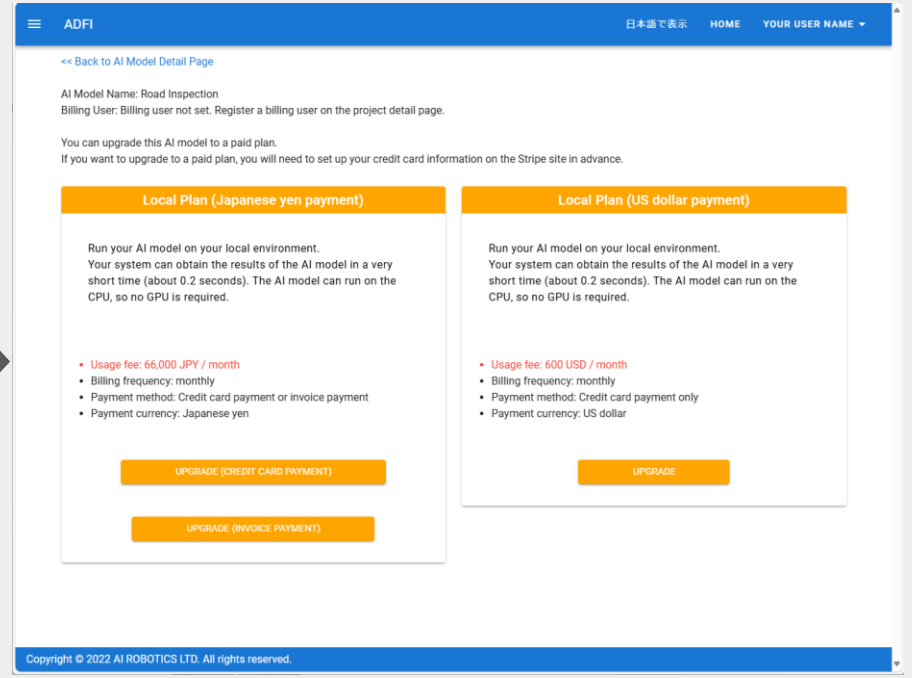


Use image recognition AI in your local environment

4. You can download the AI model execution module(Python program) from the **‘Download module to run AI model locally’**.
   You can run the AI model you have downloaded in your local environment using the sample program in the folder as a reference.



5. Reference information (Upgrading to a paid plan)

Reference information (Upgrading to a paid plan)

1. If you want to upgrade to a paid plan, select **Change Plan** button on the AI Model Detail pane.
2. We will display plan change screen, and you can change your AI model or AI application to a paid plan on this screen.
   * To change to a paid plan, you need to register a credit card or your billing information.