

# **ADFI Free Trial Tutorial**

**August 2022 edition**

**AI Robotics Ltd.**

In this tutorial, you will create an image anomaly detection AI using a sample image dataset and verify the performance of the AI.

The procedure is explained in the following flow.

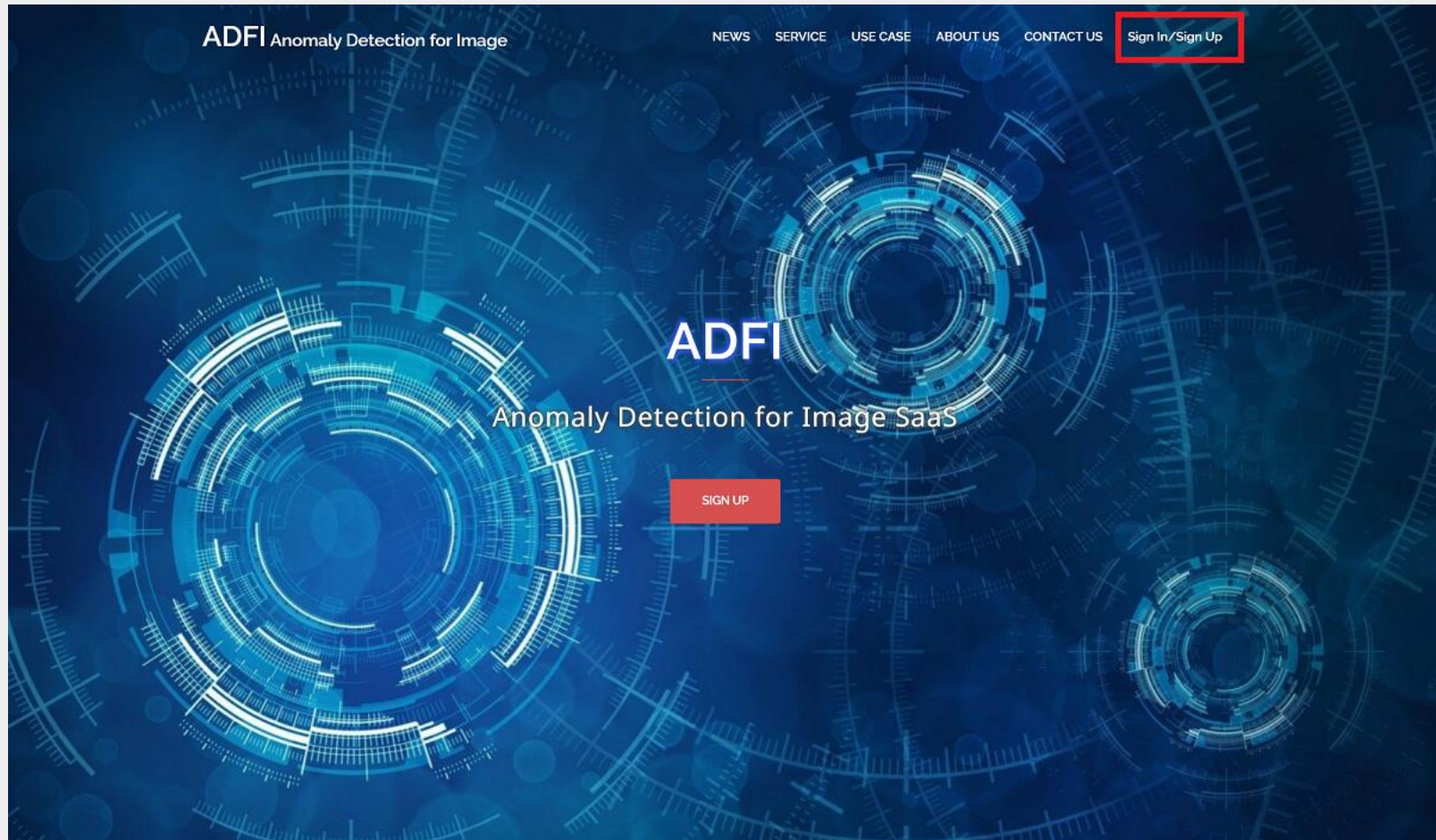
1. Create an account (first time login only)
2. Preparing the dataset
3. Creation of an image anomaly detection AI
4. Performance verification of the AI
5. Supplementary information

# **1. Create an account (first time login only)**

# 1. Create an account (first time login only)

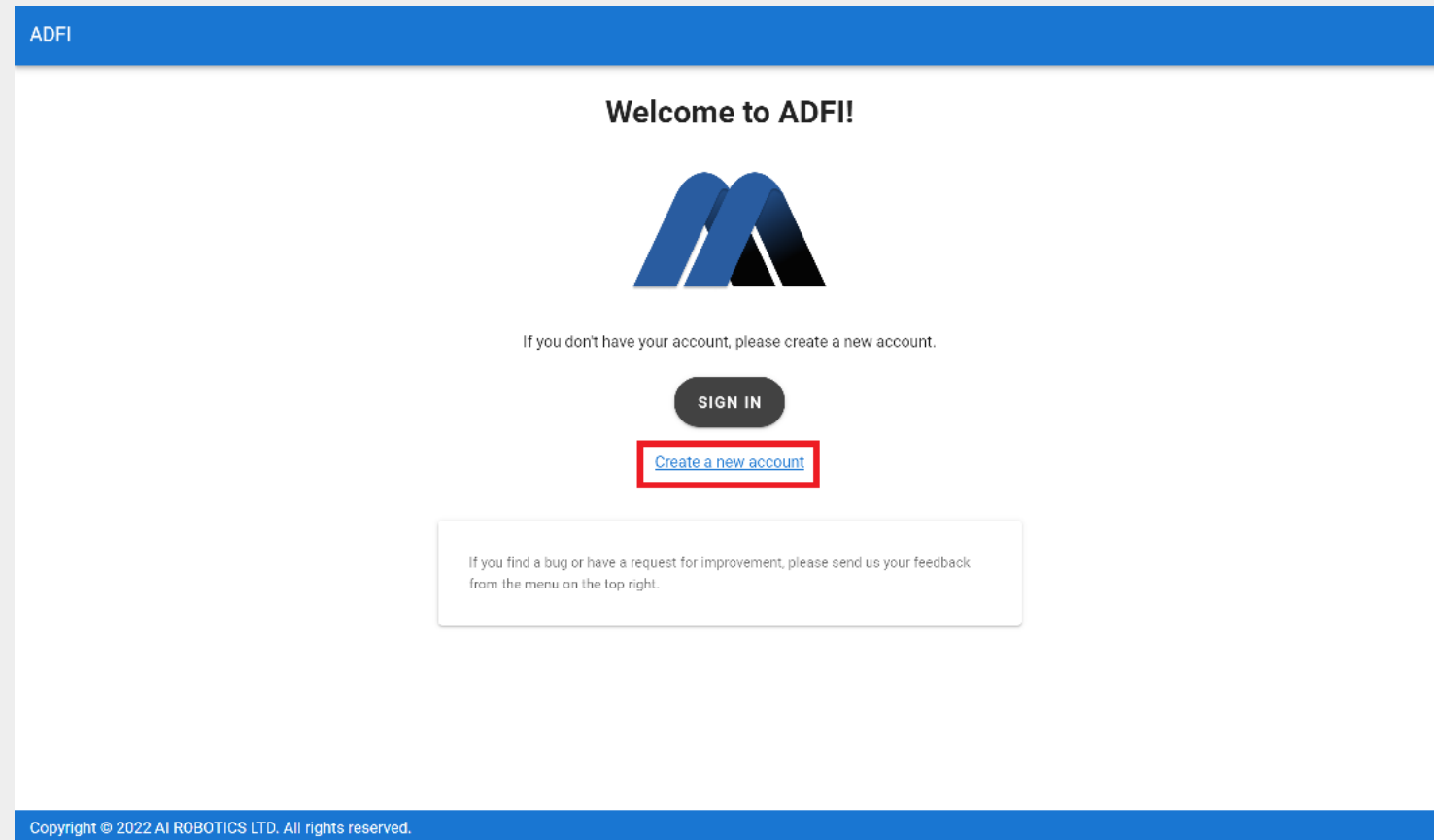


- Access the official website of ADFI (<https://adfi.jp/>).
- Click "Sign In/Sign Up" on the upper right. Go to ADFI app.



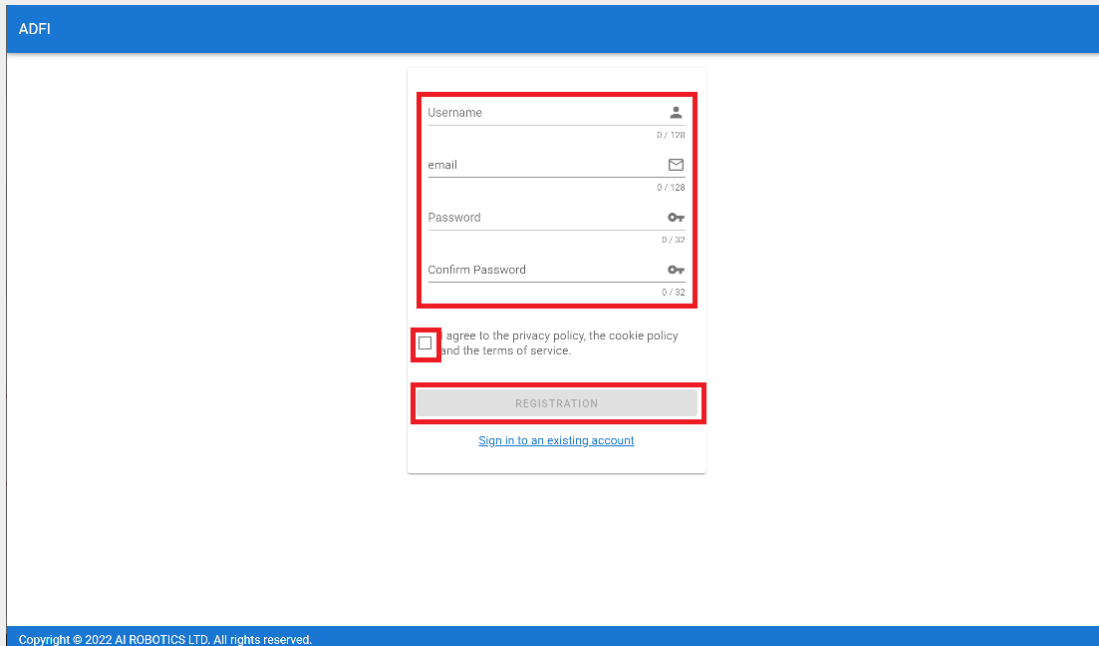
# 1. Create an account (first time login only)

- This is the top page of the ADFI app ( <https://web.us.adfi.karakurai.com/webapp/> ).
- Please click "Create a new account" for the first time.
  - From the second time onwards (after creating an account), please press the "SIGN IN" button.

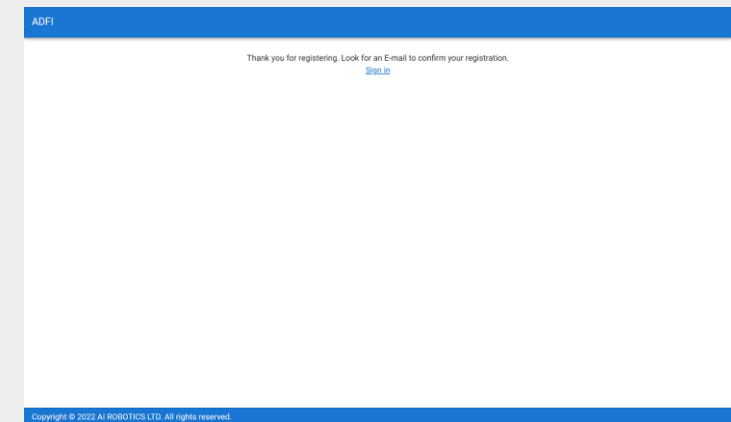


# 1. Create an account (first time login only)

- Create a new account. Enter the account information to be registered (user name, email address, password, password confirmation).
- After checking the check box at the bottom left, press the "REGISTRATION" button. A confirmation email will be sent to the email address you entered.



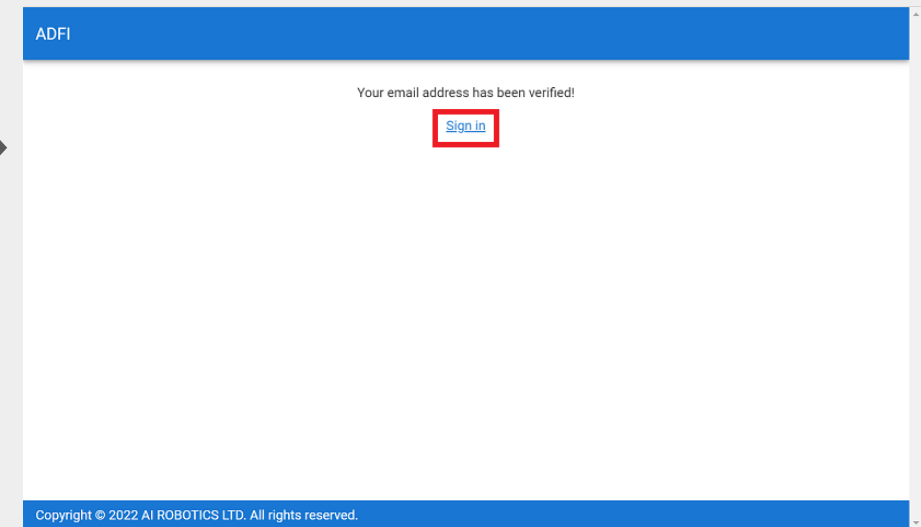
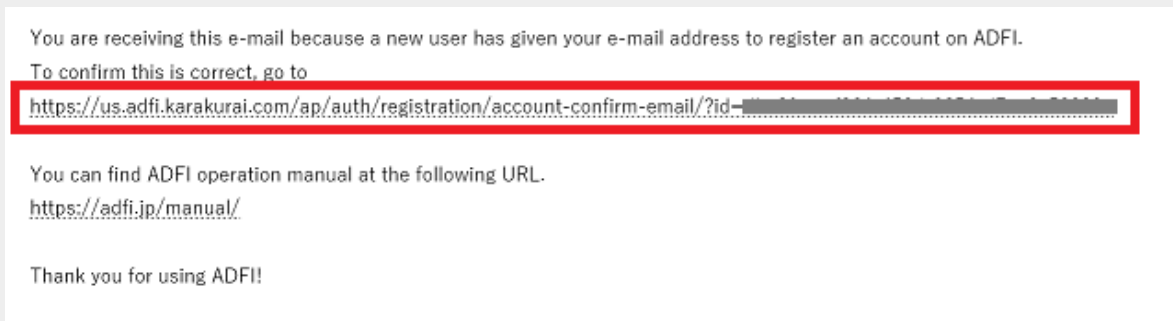
The screenshot shows the registration form on the ADFI website. The form is centered on a white background with a blue header and footer. The form fields are: Username (0 / 128), email (0 / 128), Password (0 / 32), and Confirm Password (0 / 32). Below the fields is a checkbox labeled "I agree to the privacy policy, the cookie policy and the terms of service." and a "REGISTRATION" button. A link "Sign in to an existing account" is at the bottom. A red box highlights the form fields and the checkbox area. The footer contains the text "Copyright © 2022 AI ROBOTICS LTD. All rights reserved."



# 1. Create an account (first time login only)

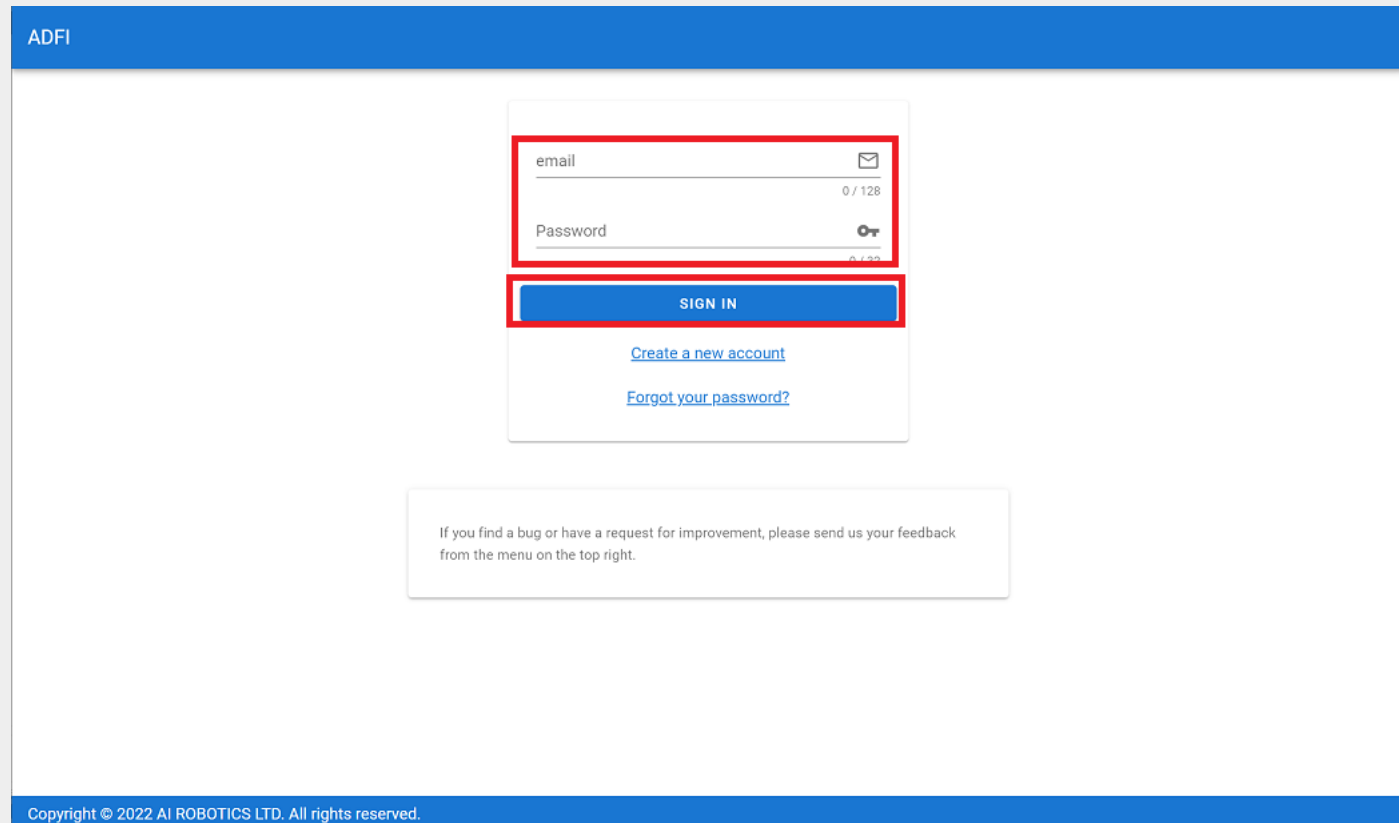


- You will receive a confirmation email from ADFI ( info-web@airobotics.jp ) titled "ADFI Please Confirm Your E-mail Address", so please click the URL in the email.
- By clicking the URL, you can log in with the email address and password you entered earlier.
  - If you do not receive the e-mail, it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



# 1. Create an account (first time login only)

- Log in to the ADFI app. Enter the account information (email address and password) you registered earlier.
- You can login to the ADFI app by pressing the "SIGN IN" button.



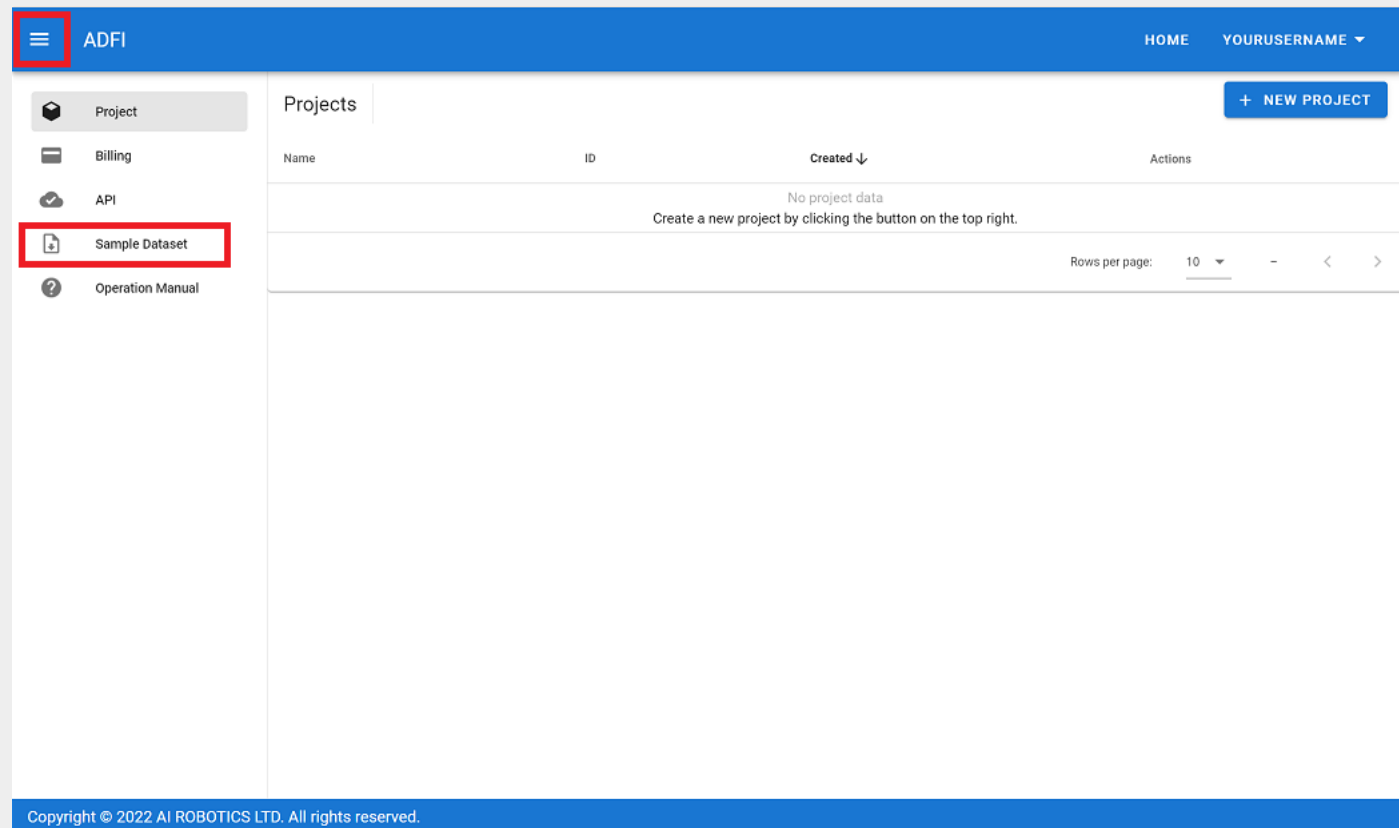
The screenshot shows the ADFI login interface. At the top is a blue header with the text "ADFI". The main content area is white and contains a central login form. The form has two input fields: "email" and "Password". The "email" field has a red border and a red box around it, with a red box around the "Password" field. Below the "email" field is a character count "0 / 128". Below the "Password" field is a character count "0 / 32". Below the input fields is a blue button labeled "SIGN IN", which is also highlighted with a red box. Below the "SIGN IN" button are two links: "Create a new account" and "Forgot your password?". At the bottom of the form is a feedback message: "If you find a bug or have a request for improvement, please send us your feedback from the menu on the top right." The footer of the page is a blue bar with the text "Copyright © 2022 AI ROBOTICS LTD. All rights reserved."



## 2. Preparing the dataset

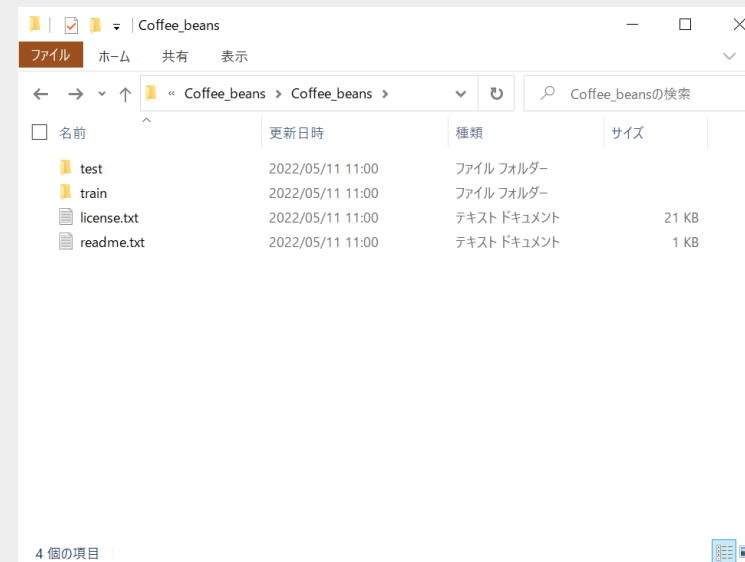
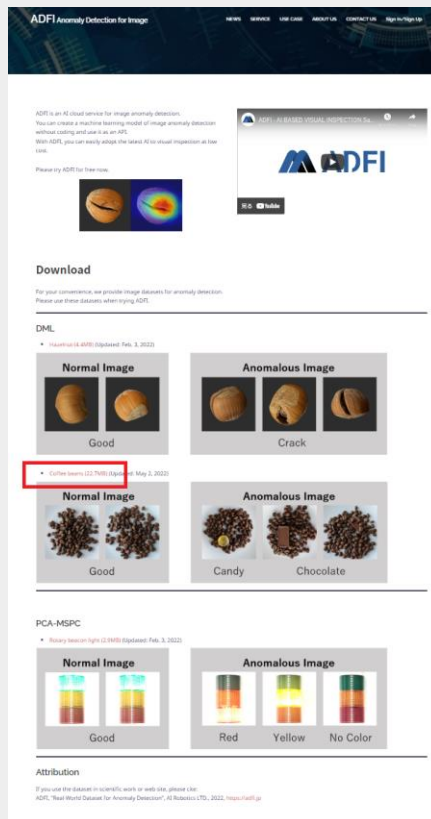
## 2. Preparing the dataset

- Prepare the datasets necessary for creating an image anomaly detection AI and verifying its performance. After logging in to the ADFI app, press "Sample Dataset" on the left menu.
  - If the menu is not displayed, press the icon on the upper left.



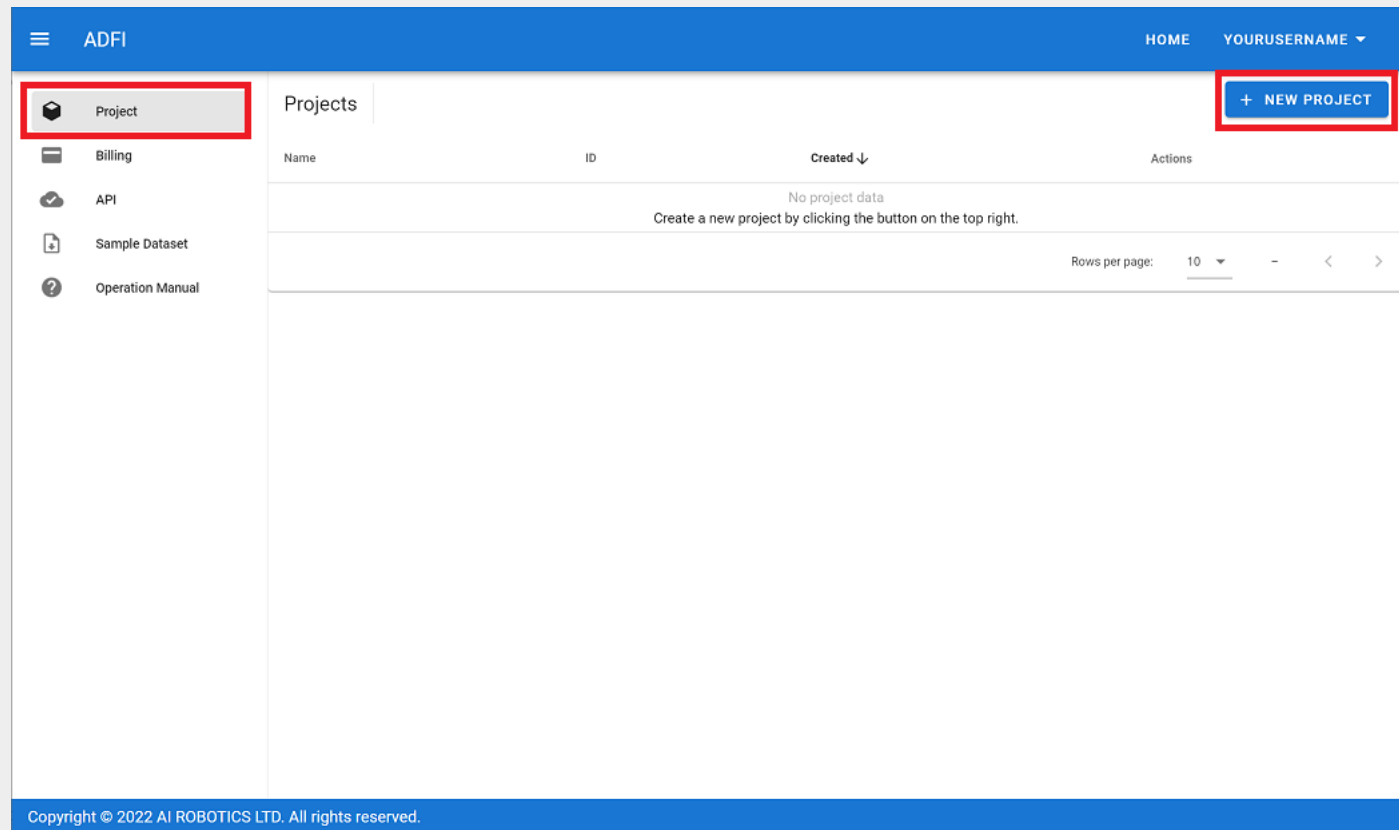
## 2. Preparing the dataset

- The download page of the ADFI official site is displayed. Click "Coffee beans (22.7MB)" in the middle of the page to download a sample image data set (examination of foreign matter in coffee beans).
  - An image containing only coffee beans is a normal image, and an image containing a foreign object (chocolate or candy) is an anomalous image.
- Expand the downloaded compressed file "Coffee\_beans.zip".



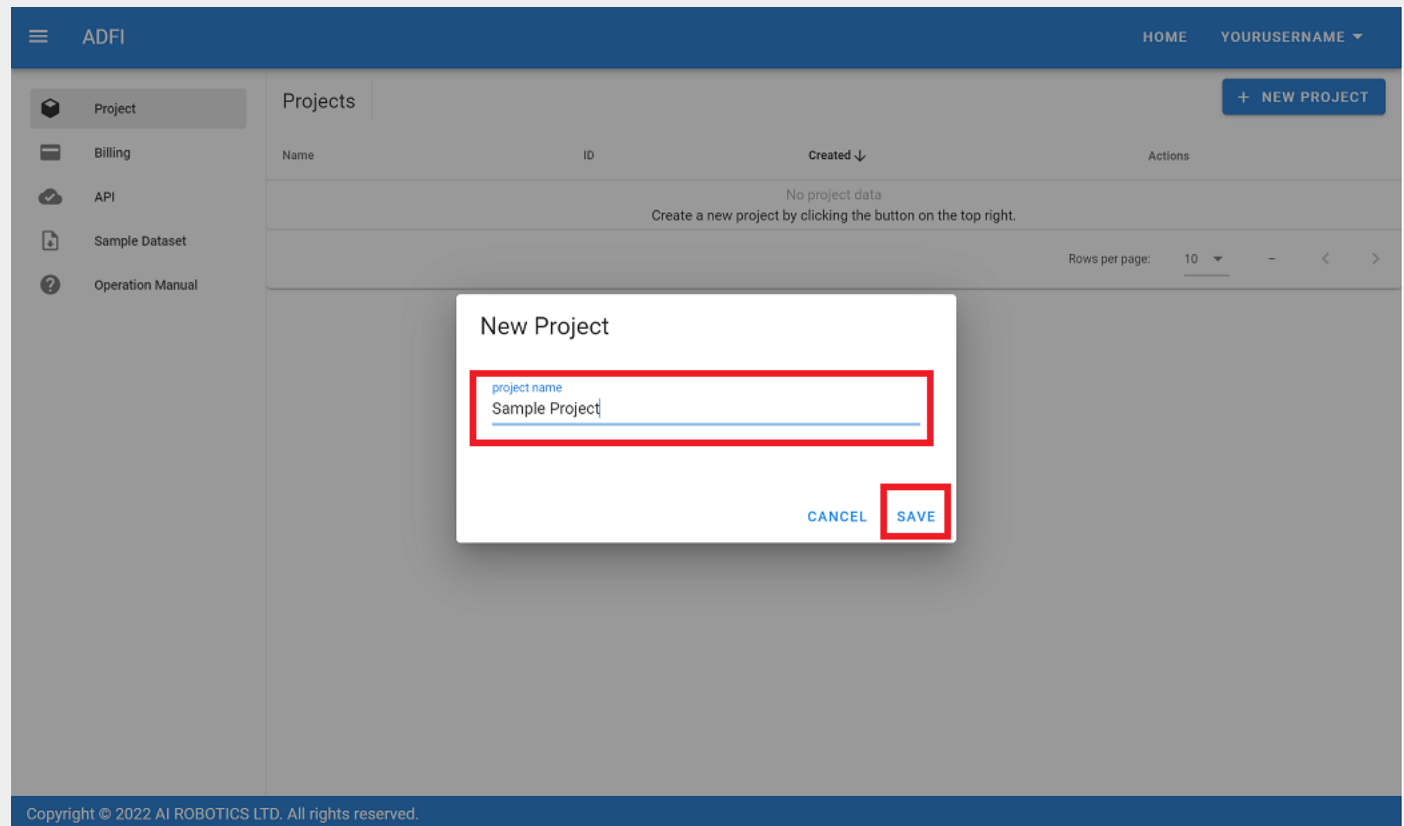
## 2. Preparing the dataset

- First, create a project. Go back to the ADFI app and click "Project" on the left menu.
- Please press the "NEW PROJECT" button on the upper right.



## 2. Preparing the dataset

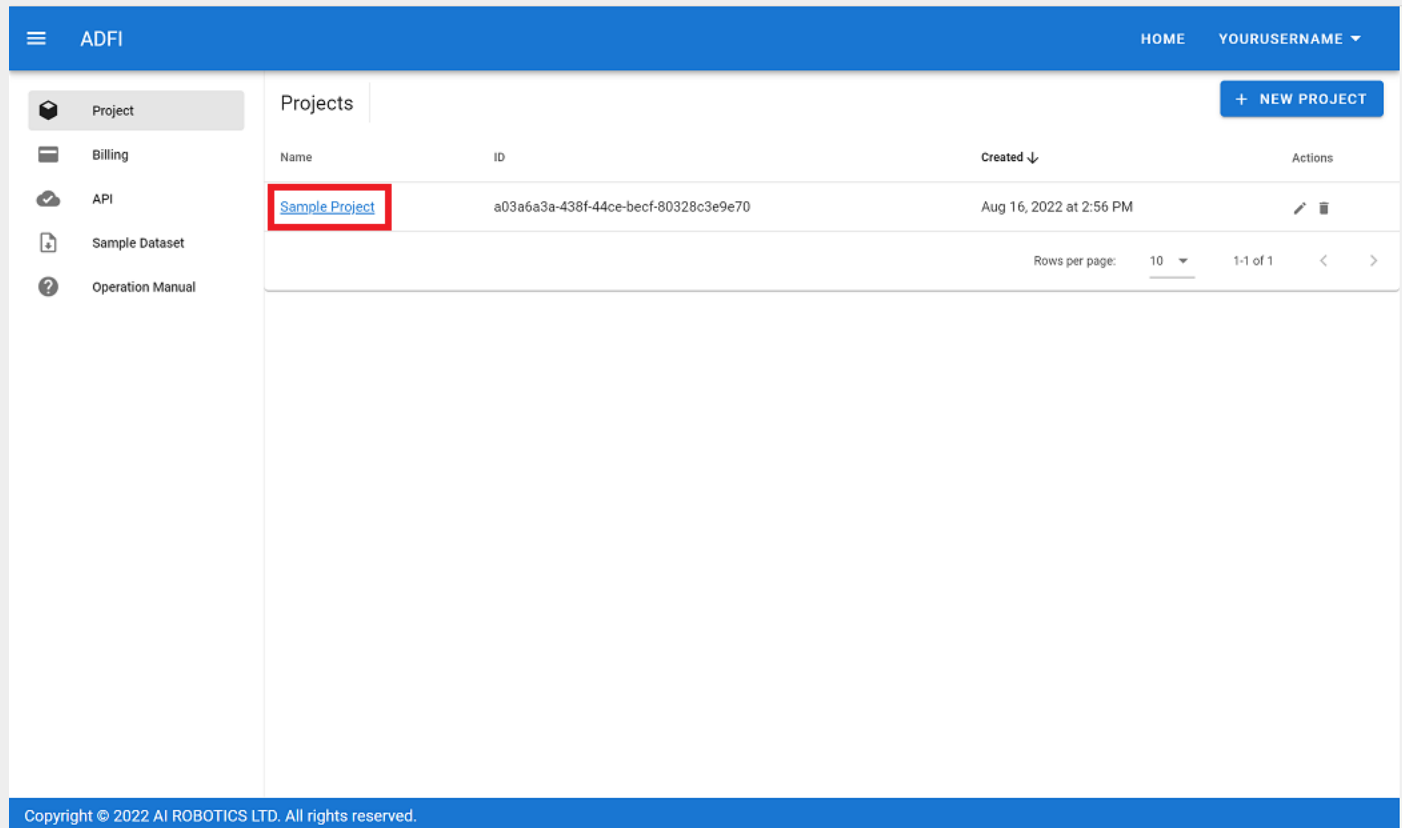
- Enter the project name you want to create and click "SAVE".





The screenshot shows the ADFI web interface. On the left is a sidebar with navigation links: Project, Billing, API, Sample Dataset, and Operation Manual. The main area is titled 'Projects' and contains a table with columns 'Name', 'ID', 'Created', and 'Actions'. The table is empty, with a message 'No project data. Create a new project by clicking the button on the top right.' and a '+ NEW PROJECT' button. A 'New Project' modal dialog is open in the center. It has a text input field labeled 'project name' with the text 'Sample Project' entered. Below the input field are two buttons: 'CANCEL' and 'SAVE'. The 'SAVE' button is highlighted with a red box. The footer of the page reads 'Copyright © 2022 AI ROBOTICS LTD. All rights reserved.'

## 2. Preparing the dataset

- A new project has been created. Please click the created project name. The project detail is displayed.

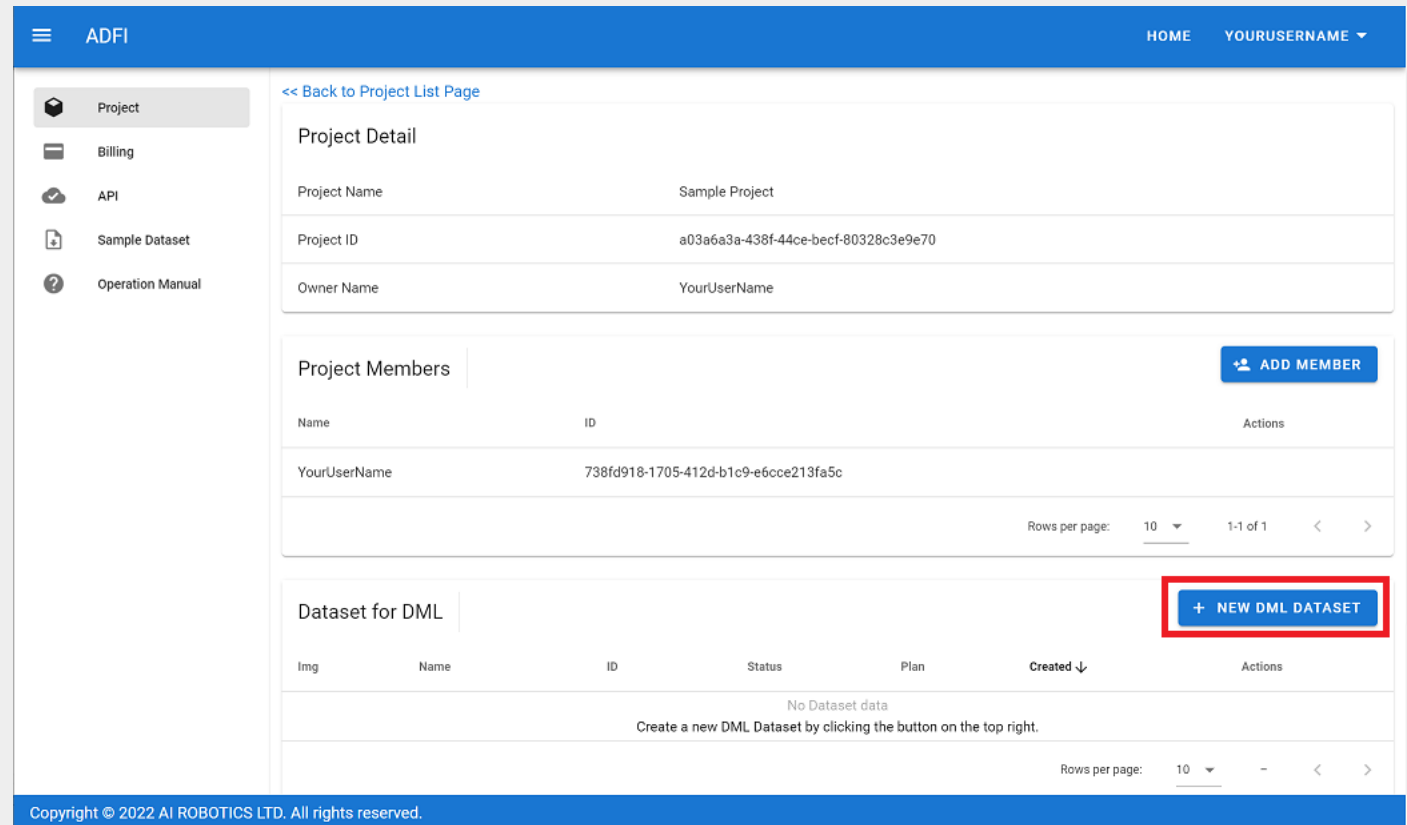


The screenshot shows the ADFI web interface. The top navigation bar is blue with the ADFI logo on the left, a hamburger menu, and the text 'ADFI'. On the right of the bar are links for 'HOME' and 'YOURUSERNAME' with a dropdown arrow. A '+ NEW PROJECT' button is located in the top right corner of the main content area. On the left side, there is a sidebar with a list of menu items: 'Project' (selected), 'Billing', 'API', 'Sample Dataset', and 'Operation Manual'. The main content area is titled 'Projects' and contains a table with the following columns: 'Name', 'ID', 'Created', and 'Actions'. The table has one row with the following data: 'Sample Project' (highlighted with a red box), 'a03a6a3a-438f-44ce-becf-80328c3e9e70', 'Aug 16, 2022 at 2:56 PM', and two icons (edit and delete). Below the table, there is a pagination control showing 'Rows per page: 10' and '1-1 of 1'. At the bottom of the page, there is a blue footer bar with the text 'Copyright © 2022 AI ROBOTICS LTD. All rights reserved.'

Name	ID	Created	Actions
<a href="#">Sample Project</a>	a03a6a3a-438f-44ce-becf-80328c3e9e70	Aug 16, 2022 at 2:56 PM	 

## 2. Preparing the dataset

- Project details allow you to add project members or create datasets.
- Press the "NEW **DML** DATASET" button on the right.
  - This time, you will use the "**DML**" algorithm for the AI algorithm. If you want to use the "**PCA**" algorithm, press the "NEW **PCA** DATASET" button on the bottom right.



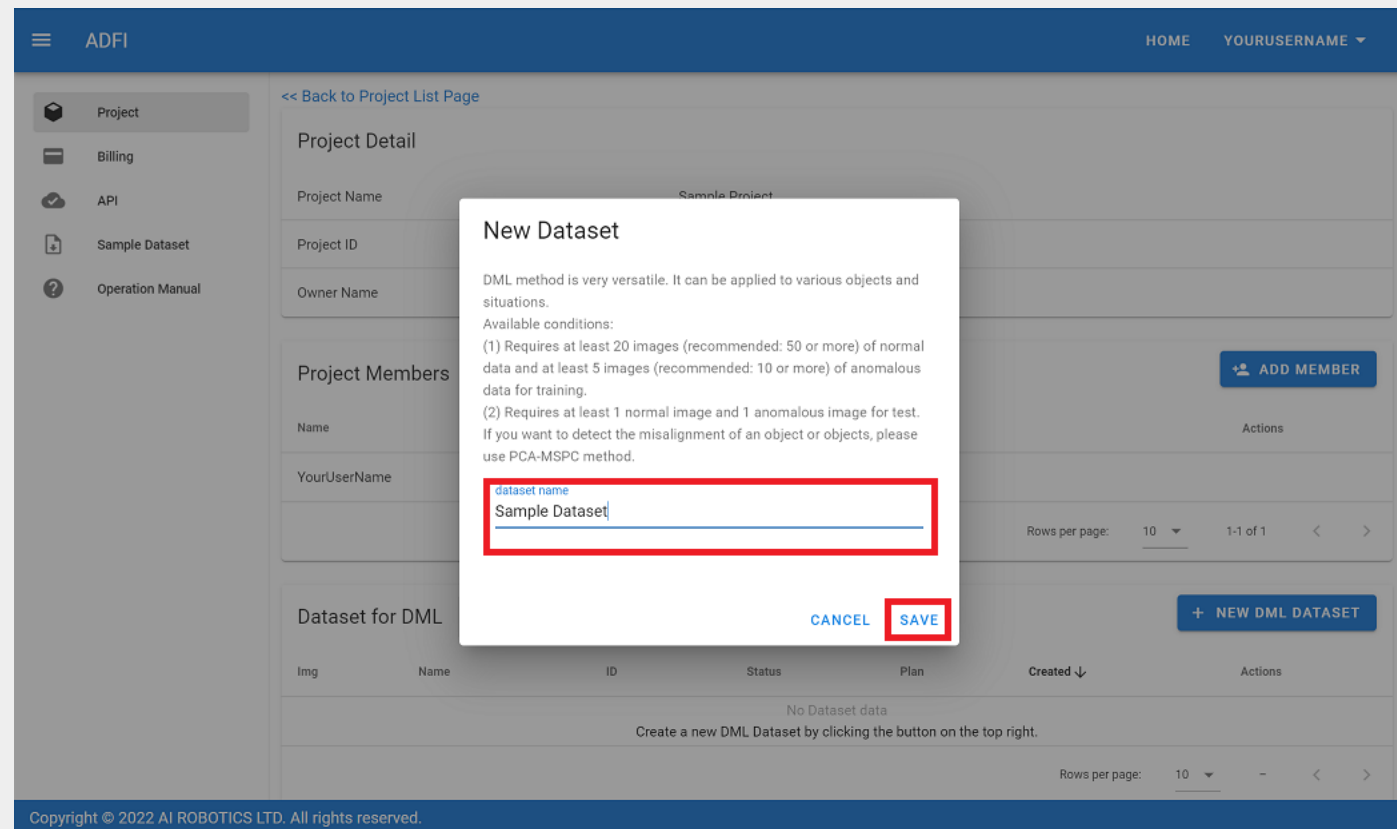
The screenshot shows the ADFI Project Detail page. The left sidebar contains navigation links: Project (selected), Billing, API, Sample Dataset, and Operation Manual. The main content area is titled "Project Detail" and includes a link to "Back to Project List Page". Below this, there is a "Project Members" section with a table listing members. The table has columns for Name, ID, and Actions. One member is listed: YourUserName with ID 738fd918-1705-412d-b1c9-e6cce213fa5c. To the right of the table is an "ADD MEMBER" button. Below the members section is a "Dataset for DML" section. It contains a table with columns: Img, Name, ID, Status, Plan, Created, and Actions. The table is currently empty, with a message "No Dataset data" and a note "Create a new DML Dataset by clicking the button on the top right." A red box highlights the "+ NEW DML DATASET" button in the top right corner of the dataset section. The footer of the page reads "Copyright © 2022 AI ROBOTICS LTD. All rights reserved."

Name	ID	Actions
YourUserName	738fd918-1705-412d-b1c9-e6cce213fa5c	

Img	Name	ID	Status	Plan	Created	Actions
No Dataset data						
Create a new DML Dataset by clicking the button on the top right.						

## 2. Preparing the dataset

- Enter the dataset name you want to create and click "SAVE".



The screenshot displays the ADFI web application interface. A modal dialog titled "New Dataset" is open in the center. The dialog contains the following text:

DML method is very versatile. It can be applied to various objects and situations.

Available conditions:

- (1) Requires at least 20 images (recommended: 50 or more) of normal data and at least 5 images (recommended: 10 or more) of anomalous data for training.
- (2) Requires at least 1 normal image and 1 anomalous image for test.

If you want to detect the misalignment of an object or objects, please use PCA-MSPC method.

Below the text is a text input field labeled "dataset name" with the value "Sample Dataset" entered. The input field is highlighted with a red border. At the bottom of the modal, there are two buttons: "CANCEL" and "SAVE". The "SAVE" button is also highlighted with a red border.

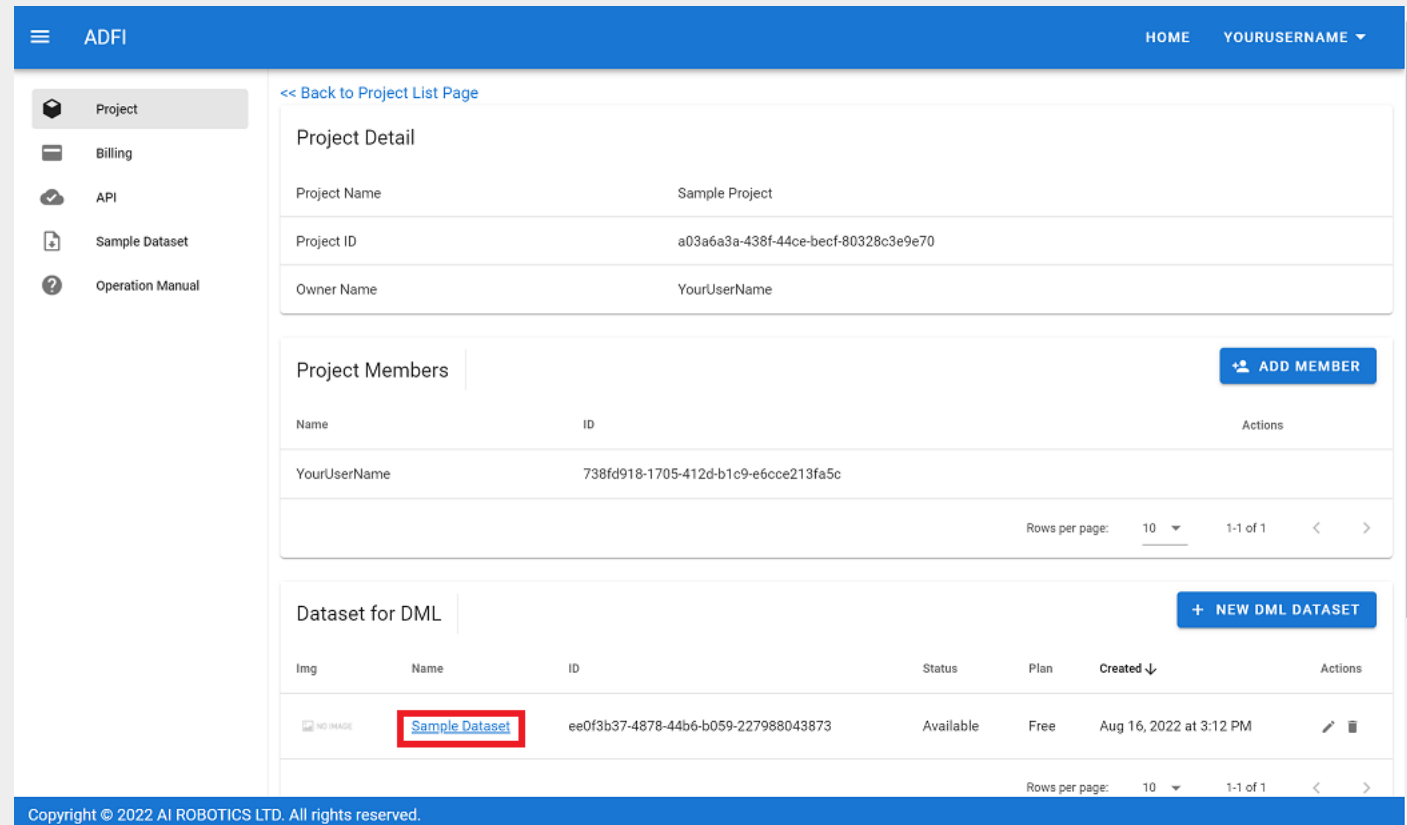
The background interface shows a sidebar with navigation options: Project, Billing, API, Sample Dataset, and Operation Manual. The main content area displays "Project Detail" for "Sample Project" with fields for Project Name, Project ID, and Owner Name. Below this is a "Project Members" section with a table showing "YourUserName". At the bottom, there is a "Dataset for DML" section with a table header (Img, Name, ID, Status, Plan, Created) and a message "No Dataset data".

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## 2. Preparing the dataset

- A new dataset has been created. Click the created dataset name. Dataset detail is displayed.



The screenshot displays the ADFI web application interface. The top navigation bar is blue with the ADFI logo on the left, a menu icon, and the text 'ADFI'. On the right side of the bar are links for 'HOME' and 'YOURUSERNAME' with a dropdown arrow. A left sidebar contains a menu with icons and labels: 'Project' (selected), 'Billing', 'API', 'Sample Dataset', and 'Operation Manual'. The main content area has a blue header with a '<< Back to Project List Page' link. Below this is the 'Project Detail' section, which includes fields for 'Project Name' (Sample Project), 'Project ID' (a03a6a3a-438f-44ce-becf-80328c3e9e70), and 'Owner Name' (YourUserName). The 'Project Members' section follows, featuring a table with columns 'Name', 'ID', and 'Actions'. It lists 'YourUserName' with ID '738fd918-1705-412d-b1c9-e6cce213fa5c'. An 'ADD MEMBER' button is in the top right of this section. Below is the 'Dataset for DML' section, which includes a '+ NEW DML DATASET' button and a table with columns 'Img', 'Name', 'ID', 'Status', 'Plan', 'Created', and 'Actions'. The table contains one row with a placeholder image, the name 'Sample Dataset' (highlighted with a red box), ID 'ee0f3b37-4878-44b6-b059-227988043873', status 'Available', plan 'Free', and creation time 'Aug 16, 2022 at 3:12 PM'. The footer of the page is blue and contains the text 'Copyright © 2022 AI ROBOTICS LTD. All rights reserved.'

ADFI

HOME YOURUSERNAME

Project

Billing

API

Sample Dataset

Operation Manual

<< Back to Project List Page

Project Detail

Project Name Sample Project

Project ID a03a6a3a-438f-44ce-becf-80328c3e9e70

Owner Name YourUserName

Project Members




ADD MEMBER

Name	ID	Actions
YourUserName	738fd918-1705-412d-b1c9-e6cce213fa5c	

Rows per page: 10 1-1 of 1

Dataset for DML

+ NEW DML DATASET

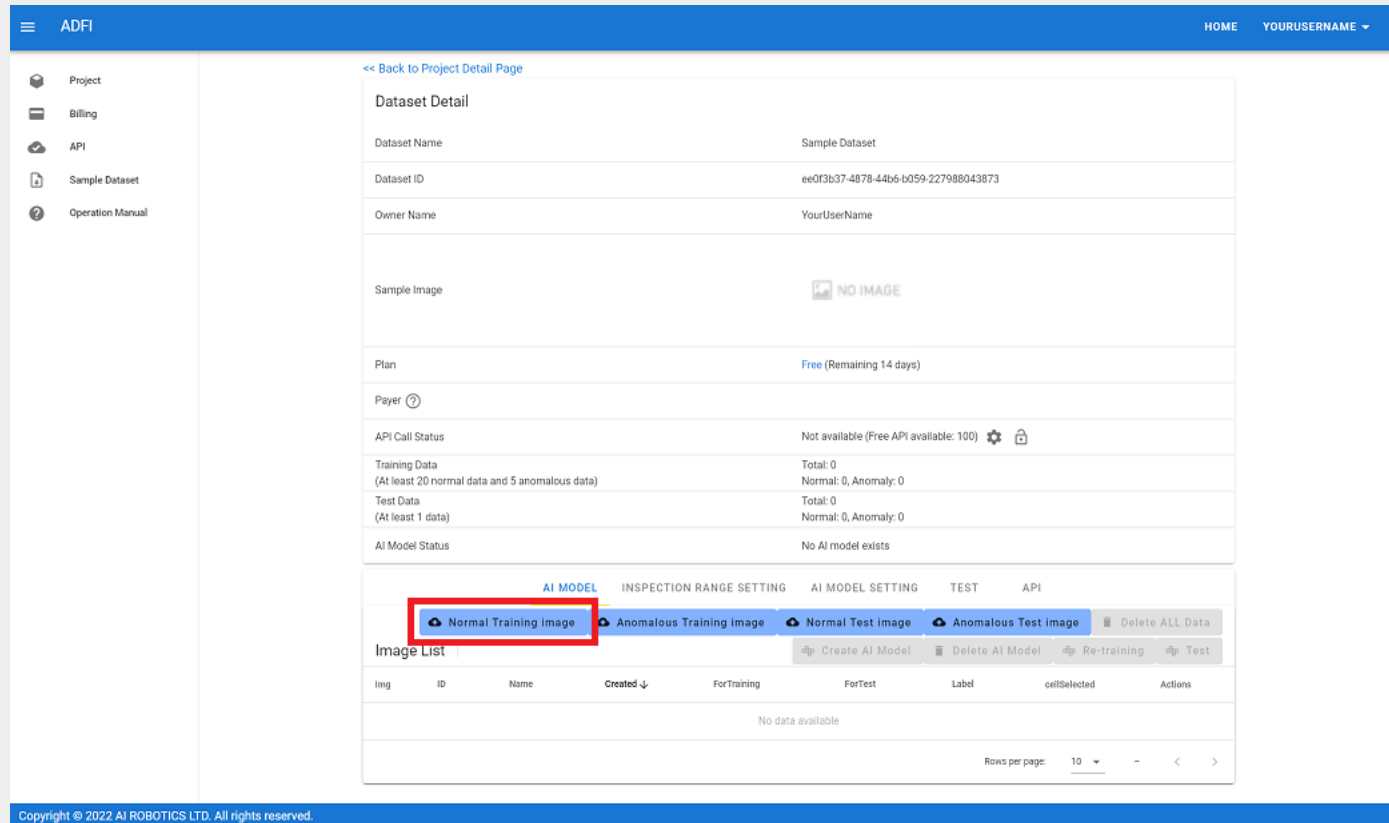
Img	Name	ID	Status	Plan	Created	Actions
	Sample Dataset	ee0f3b37-4878-44b6-b059-227988043873	Available	Free	Aug 16, 2022 at 3:12 PM	 

Rows per page: 10 1-1 of 1

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## 2. Preparing the dataset

- In the dataset detail, you can register images for AI learning and performance verification, and create an AI and verify its performance.
- First, register normal images for learning. Press the "Normal Training image" button.



The screenshot displays the ADFI web interface. The top navigation bar includes a menu icon, the ADFI logo, and links for HOME and YOURUSERNAME. The left sidebar contains links for Project, Billing, API, Sample Dataset, and Operation Manual. The main content area is titled 'Dataset Detail' and shows information for 'Sample Dataset'. The 'Normal Training image' button is highlighted with a red box.

Dataset Detail	
Dataset Name	Sample Dataset
Dataset ID	ee0f3b37-4878-44b6-b059-227988043873
Owner Name	YourUserName
Sample Image	NO IMAGE
Plan	Free (Remaining 14 days)
Player	
API Call Status	Not available (Free API available: 100)
Training Data (At least 20 normal data and 5 anomalous data)	Total: 0 Normal: 0, Anomaly: 0
Test Data (At least 1 data)	Total: 0 Normal: 0, Anomaly: 0
AI Model Status	No AI model exists

AI MODEL   INSPECTION RANGE SETTING   AI MODEL SETTING   TEST   API

Normal Training image   Anomalous Training image   Normal Test image   Anomalous Test image   Delete ALL Data

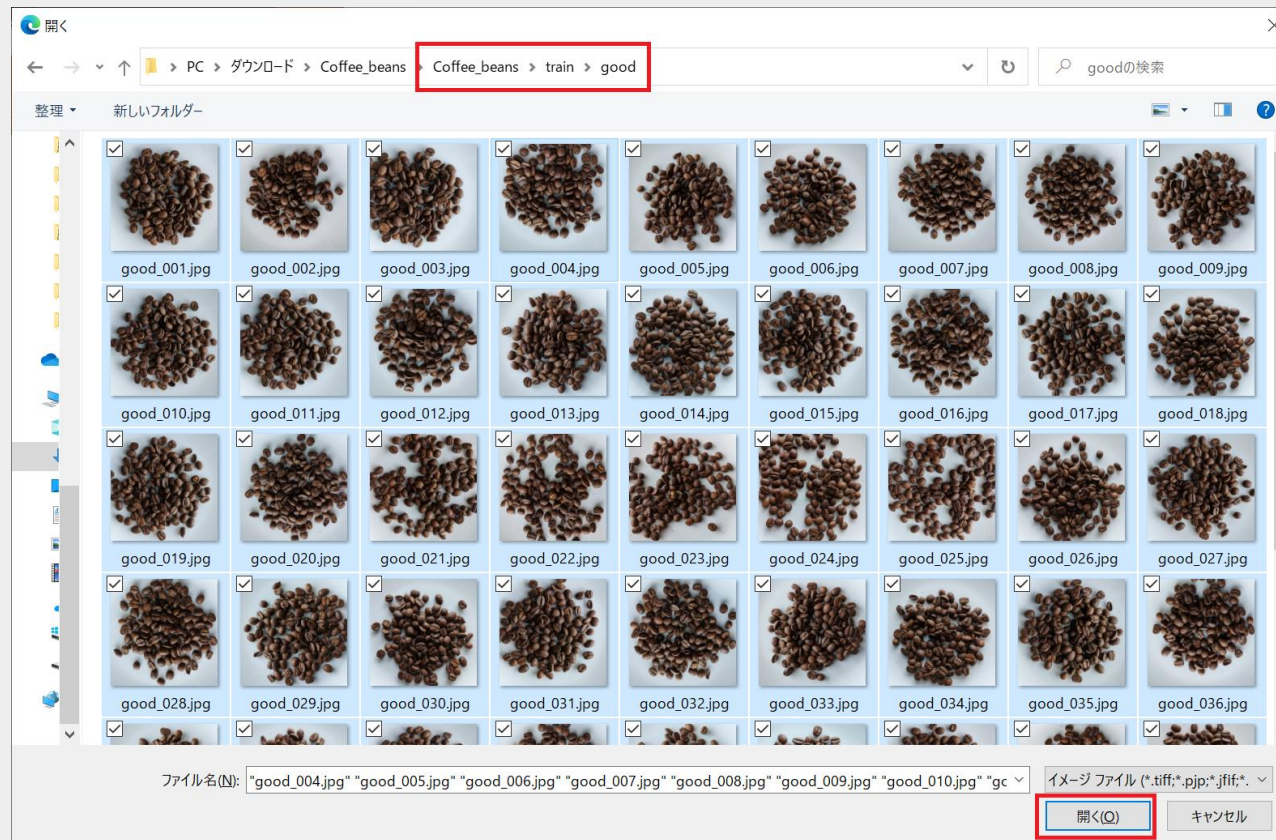
Image List

Img	ID	Name	Created	ForTraining	ForTest	Label	cellSelected	Actions
No data available								

Rows per page: 10

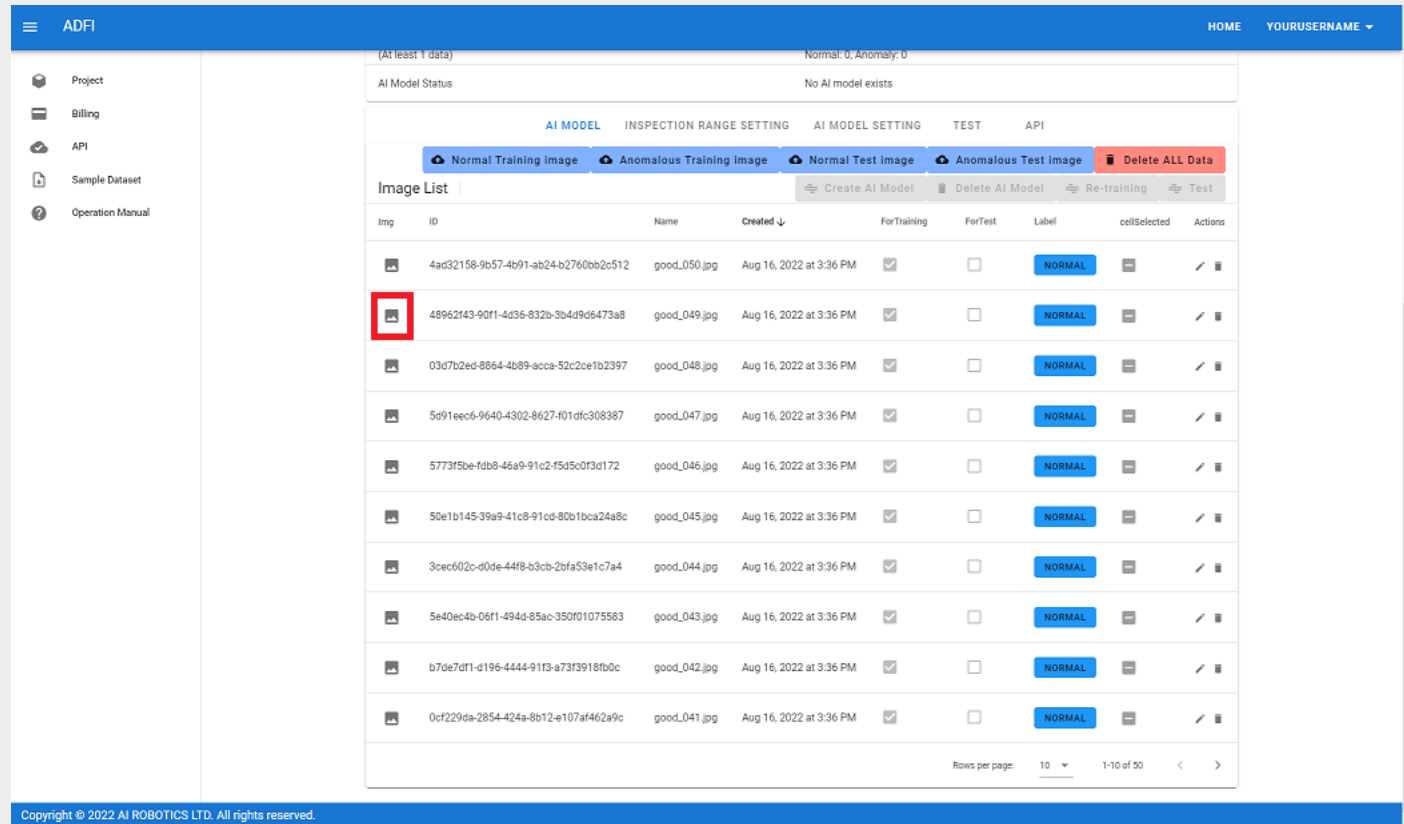
## 2. Preparing the dataset

- Open the **good** folder (Coffee\_beans -> train -> good) in the **train** folder of the sample image dataset that you expanded earlier.
- Select all the images in the good folder and press the "Open" button.
  - In Windows, you can select all at once with the "Ctrl" button + "A" button.

































## 2. Preparing the dataset

- After completing the upload of the image you selected earlier, a list of registered images will be displayed at the bottom of the dataset detail screen.
- Please press the icon on the left of any image information. You can check the registered image.

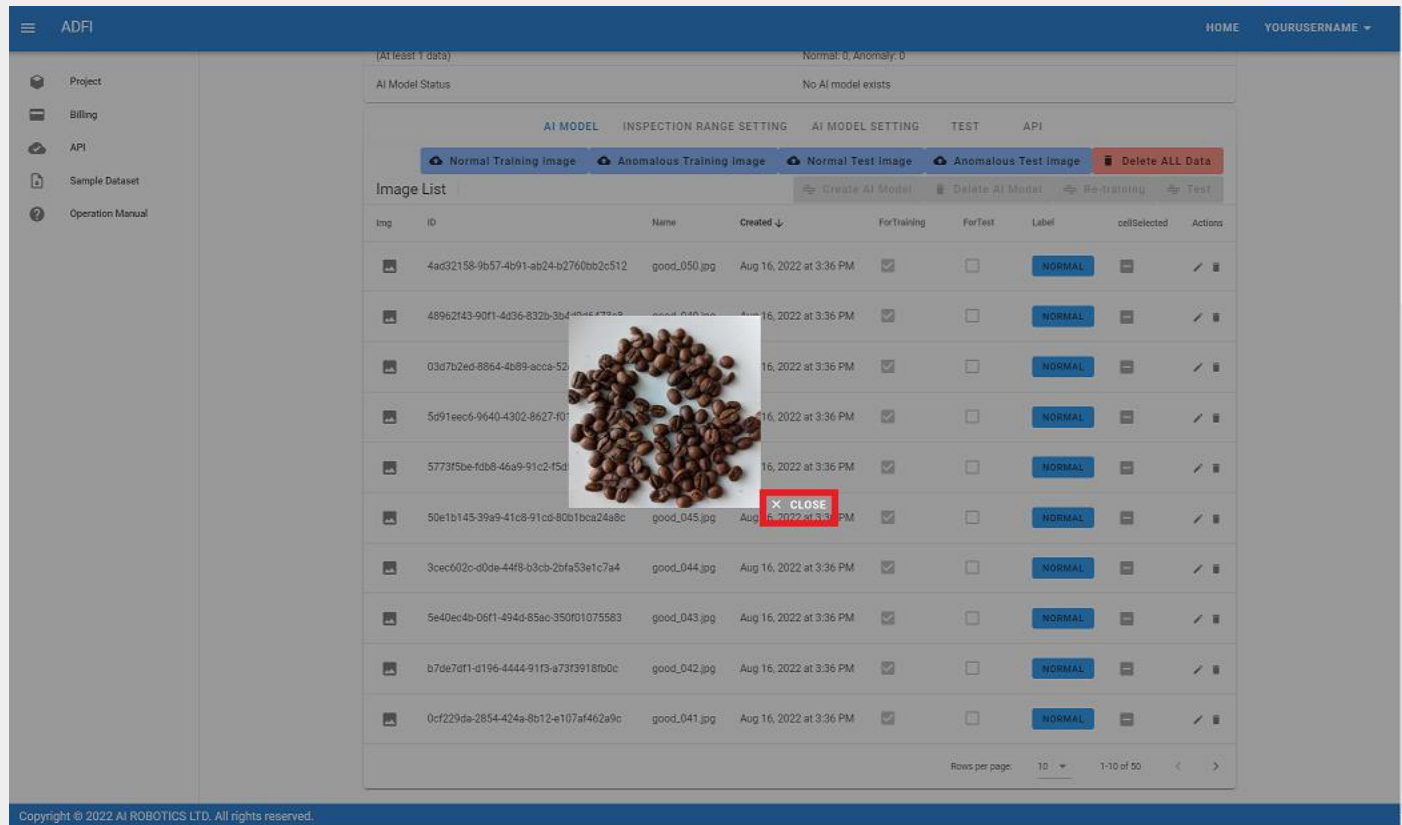


The screenshot displays the ADFI web application interface. On the left is a sidebar with navigation links: Project, Billing, API, Sample Dataset, and Operation Manual. The main content area shows the 'Image List' section. At the top, there are tabs for 'AI MODEL', 'INSPECTION RANGE SETTING', 'AI MODEL SETTING', 'TEST', and 'API'. Below these are buttons for 'Normal Training image', 'Anomalous Training image', 'Normal Test image', 'Anomalous Test image', and 'Delete ALL Data'. The 'Image List' table has columns: Img, ID, Name, Created, For Training, For Test, Label, cellSelected, and Actions. The second row of the table is highlighted with a red box around the 'Img' column icon. The footer of the interface shows 'Copyright © 2022 AI ROBOTICS LTD. All rights reserved.'

Img	ID	Name	Created	For Training	For Test	Label	cellSelected	Actions
	4ad32158-9b57-4b91-ab24-b2760bb2c512	good_050.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL	<input type="checkbox"/>	 
	48962f43-90f1-4d36-832b-3b4d9d6473a8	good_049.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL	<input type="checkbox"/>	 
	03d7b2ed-8864-4b89-acc5-52c2ce1b2397	good_048.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL	<input type="checkbox"/>	 
	5d91eec6-9640-4302-8627-401dfc308387	good_047.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL	<input type="checkbox"/>	 
	5773f5be-fdb8-46a9-91c2-45d5c0f3d172	good_046.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL	<input type="checkbox"/>	 
	50e1b145-39a9-41c8-91cd-80b1bca24a8c	good_045.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL	<input type="checkbox"/>	 
	3cec602c-d0de-44f8-b3cb-2bfa53e1c7a4	good_044.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL	<input type="checkbox"/>	 
	5e40ec4b-06f1-494d-85ac-350f01075583	good_043.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL	<input type="checkbox"/>	 
	b7de7df1-d196-4444-91f3-a73f3918fb0c	good_042.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL	<input type="checkbox"/>	 
	0cf229da-2854-424a-8b12-e107af462a9c	good_041.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL	<input type="checkbox"/>	 

## 2. Preparing the dataset

- The registered image is displayed. Please click "CLOSE" in the lower right.

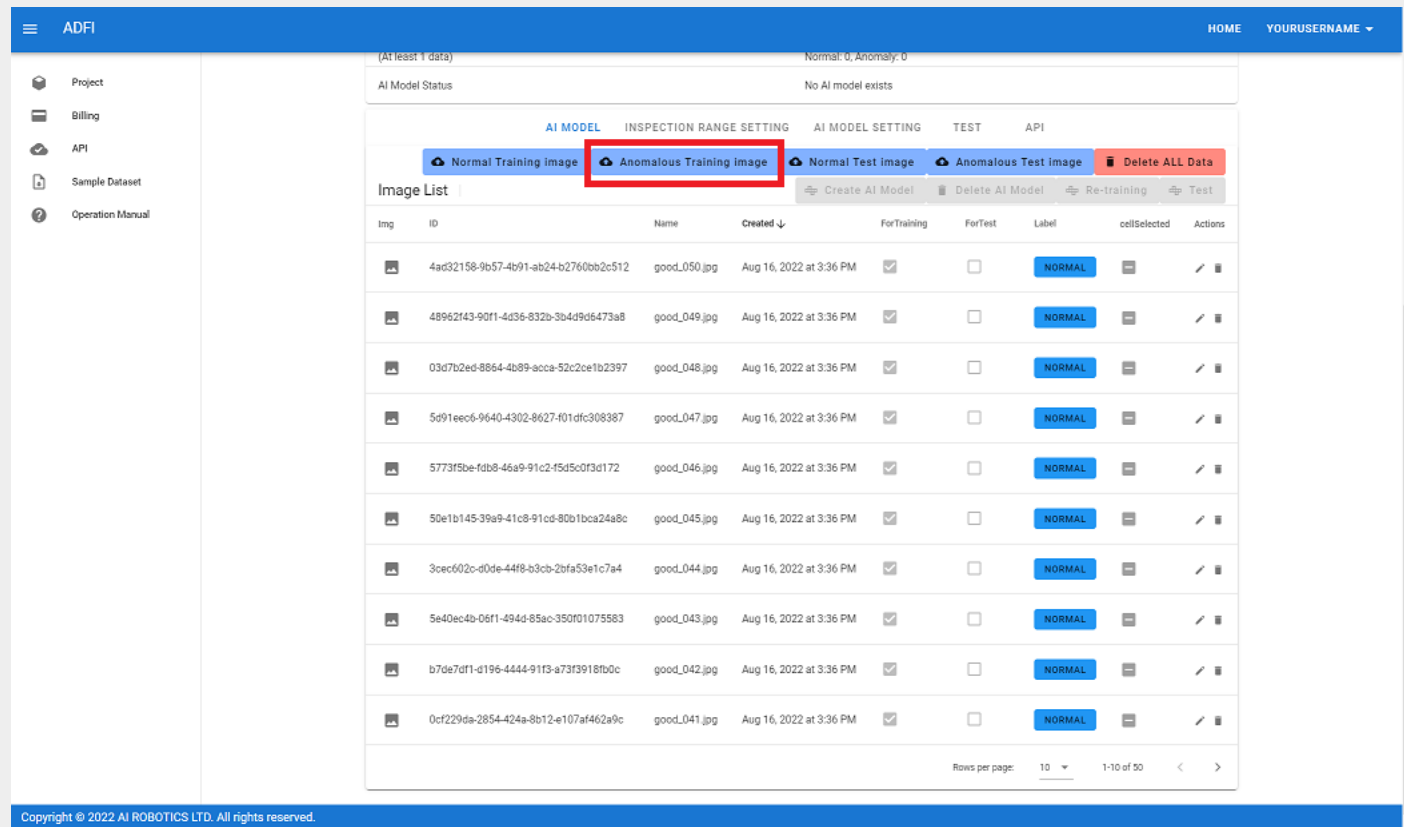


The screenshot displays the ADFI web application interface. On the left is a sidebar with navigation links: Project, Billing, API, Sample Dataset, and Operation Manual. The main content area has a top navigation bar with 'HOME' and 'YOUR USERNAME'. Below this, there's a section for 'AI Model Status' indicating 'No AI model exists'. A series of tabs are visible: 'Normal Training image', 'Anomalous Training image', 'Normal Test image', 'Anomalous Test image', and 'Delete ALL Data'. The 'Image List' table is shown with columns: Img, ID, Name, Created, For Training, For Test, Label, cellSelected, and Actions. The table contains 10 rows of data, all labeled 'NORMAL'. A modal image viewer is open, displaying a photo of coffee beans. A red box highlights the 'CLOSE' button in the bottom right corner of the modal. The footer of the page reads 'Copyright © 2022 AI ROBOTICS LTD. All rights reserved.'

Img	ID	Name	Created	For Training	For Test	Label	cellSelected	Actions
	4ad32158-9b57-4b91-ab24-b276fbb2c512	good_050.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL		
	48962f43-90f1-4d36-832b-3b44b4e4f7b8	good_049.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL		
	03d7b2e0-8864-4b89-acc8-52b4b4e4f7b8	good_048.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL		
	5d91eec6-9640-4302-8627-f0f4b4e4f7b8	good_047.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL		
	5773f5be-fdb8-46a9-91c2-45d4b4e4f7b8	good_046.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL		
	50e1b145-39a9-41c8-91cd-80b1bca24a8c	good_045.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL		
	3cec602c-d0de-44f8-b3cb-2bfa53e1c7a4	good_044.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL		
	5e40ec4b-d6f1-494d-85ac-350f01075583	good_043.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL		
	b7de7af1-d196-4444-91f3-a73f3918fb0c	good_042.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL		
	0cf229da-2854-424a-8b12-e107af462a9c	good_041.jpg	Aug 16, 2022 at 3:36 PM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NORMAL		

## 2. Preparing the dataset

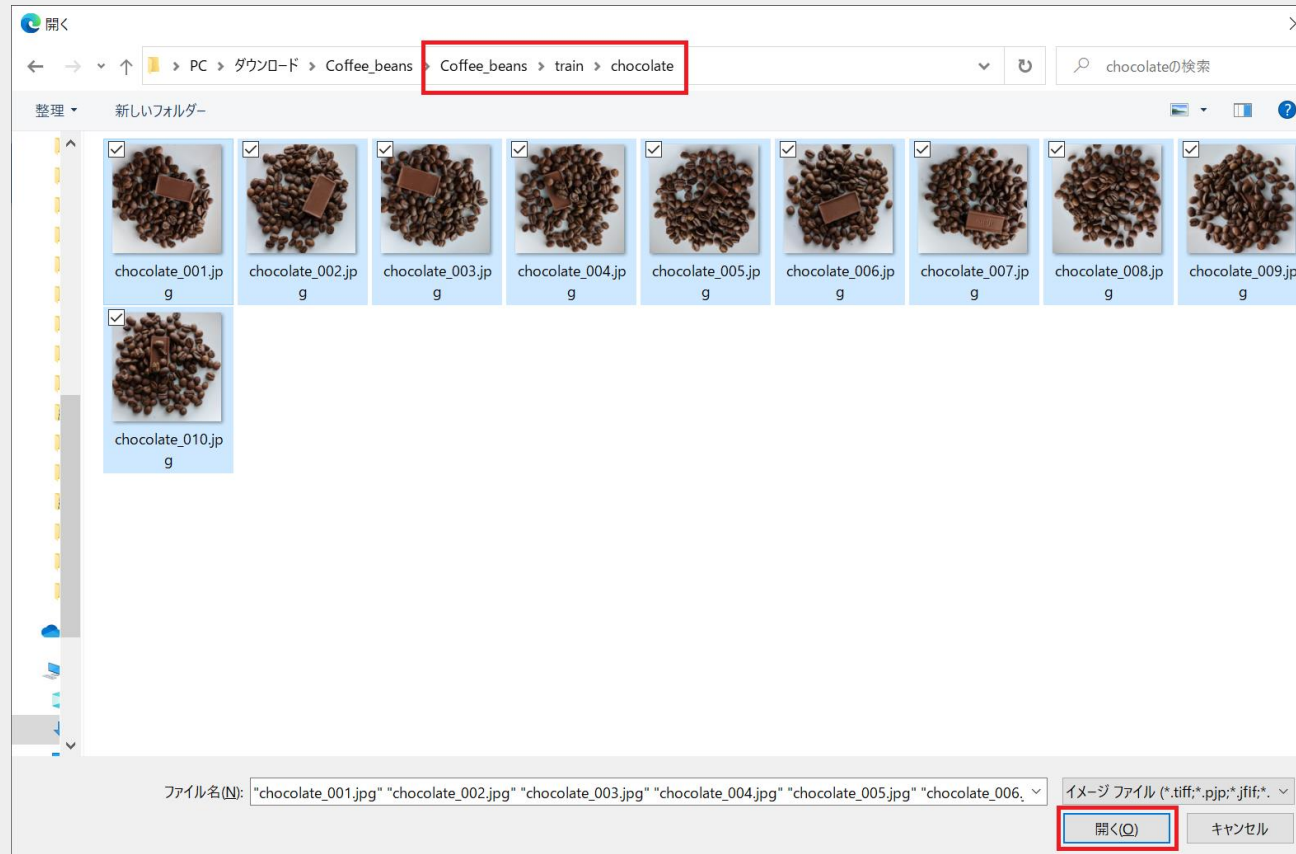
- Next, register anomalous images for learning. Press the "**Anomalous Training** image" button.
  - This operation is only required for the "DML" algorithm. In the case of the "PCA" algorithm, registration of anomalous images for training is not required.



The screenshot displays the ADFI web interface. On the left is a sidebar with navigation links: Project, Billing, API, Sample Dataset, and Operation Manual. The main content area has a top bar with 'ADFI', 'HOME', and 'YOUR USERNAME'. Below this, there's a status section showing '(At least 1 data)' and 'Normal: 0, Anomaly: 0'. A table titled 'Image List' contains columns for 'Img', 'ID', 'Name', 'Created', 'For Training', 'For Test', 'Label', 'cellSelected', and 'Actions'. The 'For Training' column has checkboxes, and the 'Label' column has 'NORMAL' buttons. Above the table, there are buttons for 'Normal Training image', 'Anomalous Training image' (highlighted with a red box), 'Normal Test image', 'Anomalous Test image', and 'Delete ALL Data'. At the bottom, there's a footer with 'Copyright © 2022 AI ROBOTICS LTD. All rights reserved.'

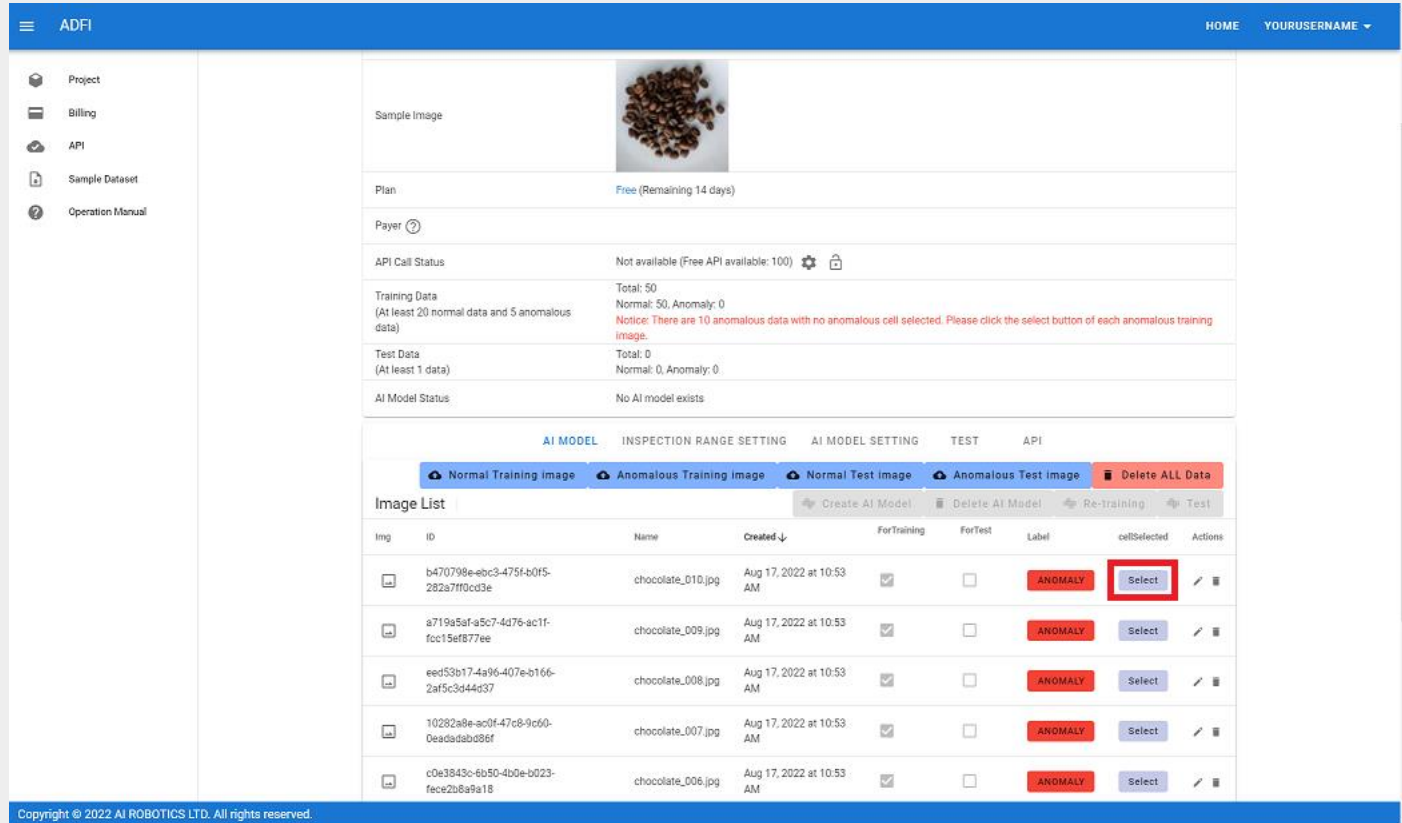
## 2. Preparing the dataset

- Open the **chocolate** folder ( Coffee\_beans -> train -> chocolate ) in the **train** folder of the sample image dataset.
- Select all the images in the chocolate folder and press the "Open" button.
  - In Windows, you can select all at once with the "Ctrl" button + "A" button.



## 2. Preparing the dataset

- After completing the upload of the anomaly image, the anomaly image is added to the image list.
- Anomaly images for training should specify anomalous regions in the image. Press the "Select" button to the right of the image information.
  - Anomaly images that do not specify an anomaly region are not used for AI training.



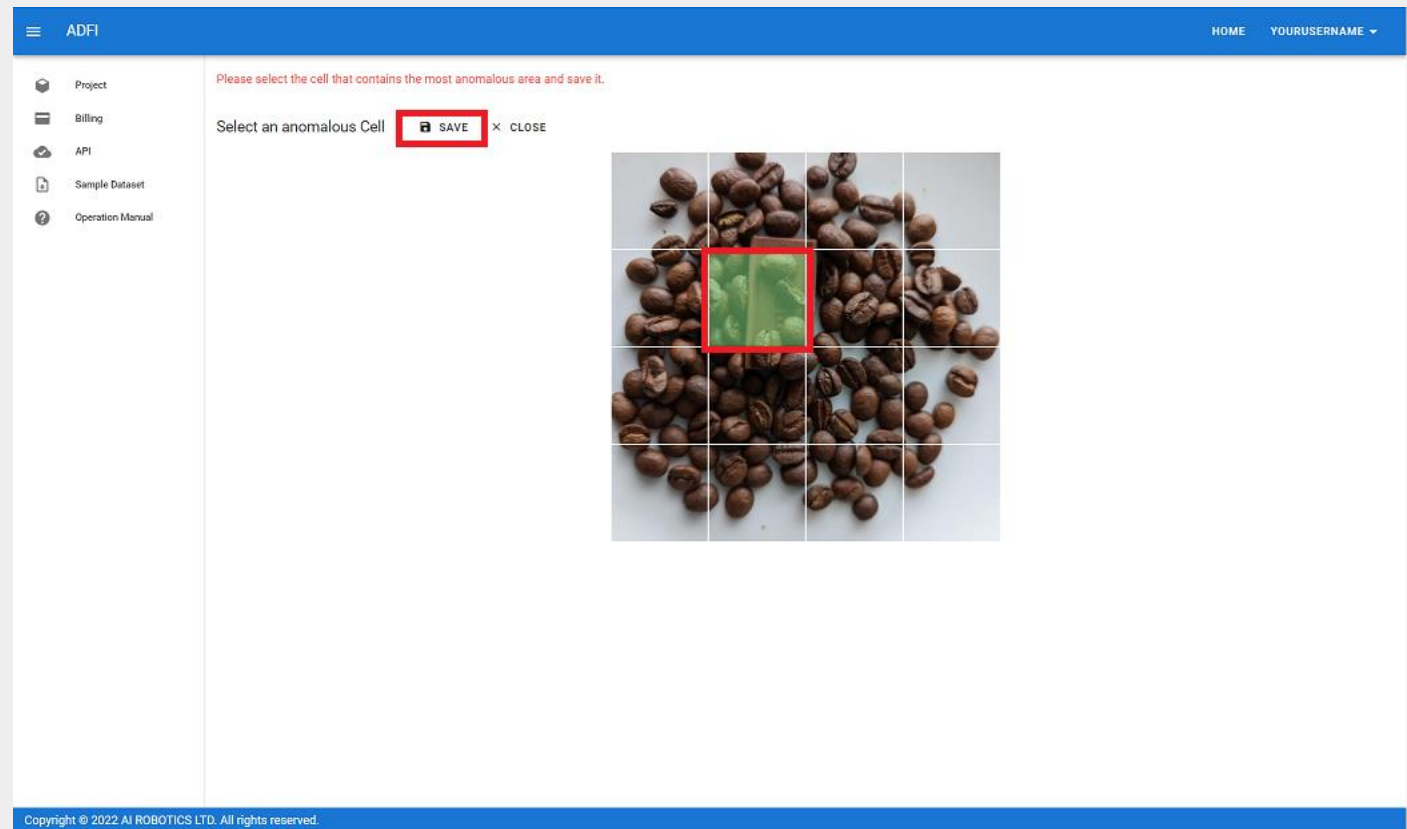
The screenshot displays the ADFI web interface. The top navigation bar includes a menu icon, the ADFI logo, and links for HOME and YOUR USERNAME. The left sidebar contains links for Project, Billing, API, Sample Dataset, and Operation Manual. The main content area shows a 'Sample Image' of coffee beans. Below this, a table displays system status: Plan (Free, 14 days remaining), Payer (unknown), API Call Status (Not available, 100 calls remaining), Training Data (Total: 50, Normal: 50, Anomaly: 0), Test Data (Total: 0, Normal: 0, Anomaly: 0), and AI Model Status (No AI model exists). The 'AI MODEL' tab is active, showing a table of images for training and testing. The table has columns for Image ID, Name, Created, For Training, For Test, Label, and Actions. The first row, 'chocolate\_010.jpg', is highlighted, and its 'Select' button is circled in red. The bottom of the page shows a copyright notice for 2022 AI ROBOTICS LTD.

Img	ID	Name	Created ↓	For Training	For Test	Label	cellSelected	Actions
	b470798e-ebc3-475f-b0f5-282a7ff0cd3e	chocolate_010.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	Select	
	a719a5af-95c7-4d76-ac1f-fcc15ef877ee	chocolate_009.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	Select	
	eed53b17-4a96-407e-b166-2af5c3d44d37	chocolate_008.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	Select	
	10282a8e-ac0f-47c8-9c60-0eada3ab086f	chocolate_007.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	Select	
	c0e3843c-6b50-4b0e-b023-fcce2b8a9a18	chocolate_006.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	Select	



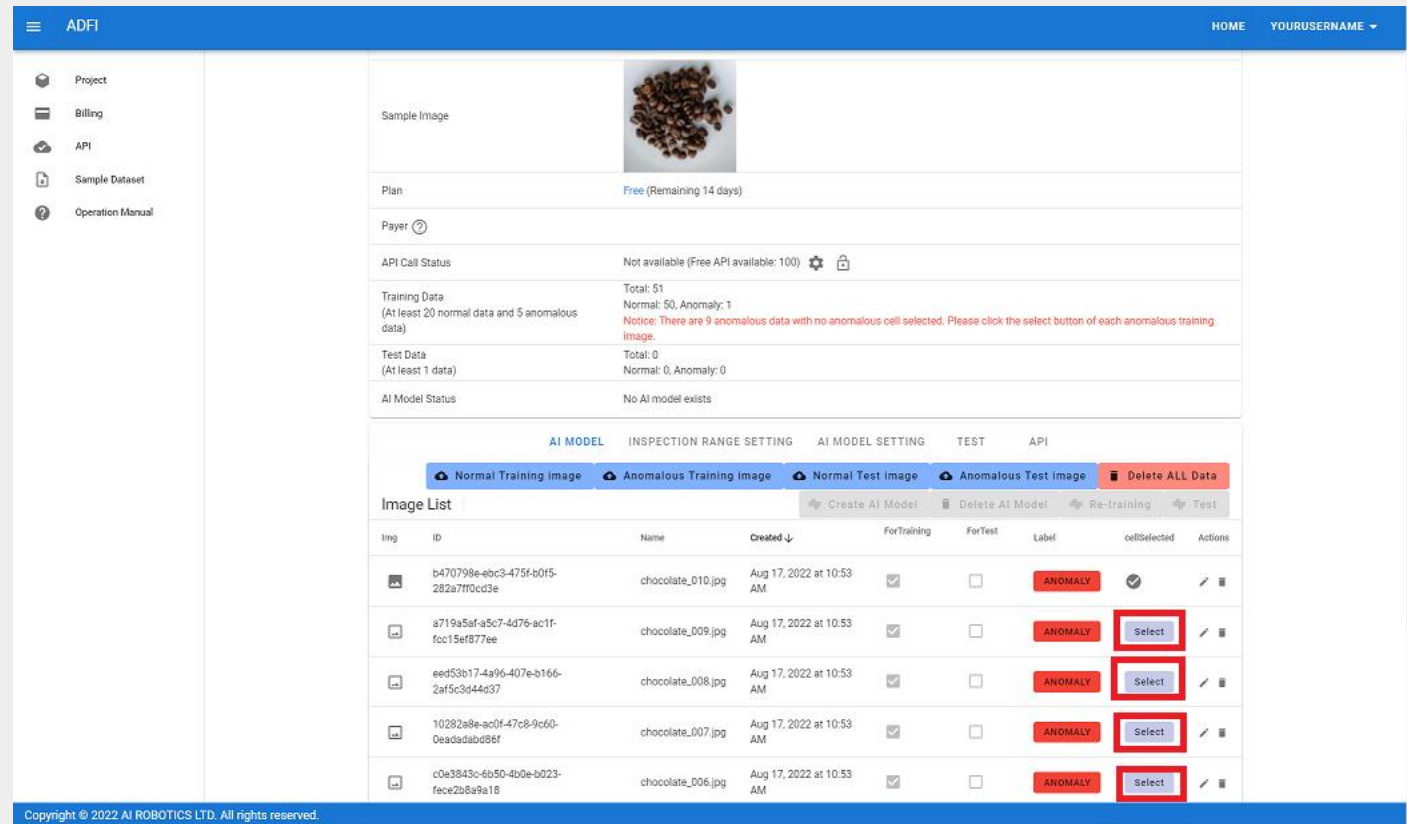
## 2. Preparing the dataset

- Specifies the abnormal region in the image. From the 16 divisions of the image, select and click on one area that contains an anomaly. Selected areas are displayed in green.
  - If the anomaly exists in multiple areas, select the one that is the most characteristic.
- After selecting, press the "SAVE" button on the upper left.



## 2. Preparing the dataset

- A check mark is displayed to the right of the image information that selected the anomaly area.
- Repeat the same operation for each image information, and change all "Select" buttons to display check marks.



ADF I

HOME YOURUSERNAME

Project

Billing

API

Sample Dataset

Operation Manual

Sample Image

Plan: Free (Remaining 14 days)

API Call Status: Not available (Free API available: 100)

Training Data (At least 20 normal data and 5 anomalous data): Total: 51, Normal: 50, Anomaly: 1. Notice: There are 9 anomalous data with no anomalous cell selected. Please click the select button of each anomalous training image.

Test Data (At least 1 data): Total: 0, Normal: 0, Anomaly: 0

AI Model Status: No AI model exists

AI MODEL INSPECTION RANGE SETTING AI MODEL SETTING TEST API

Normal Training image Anomalous Training image Normal Test image Anomalous Test image Delete ALL Data

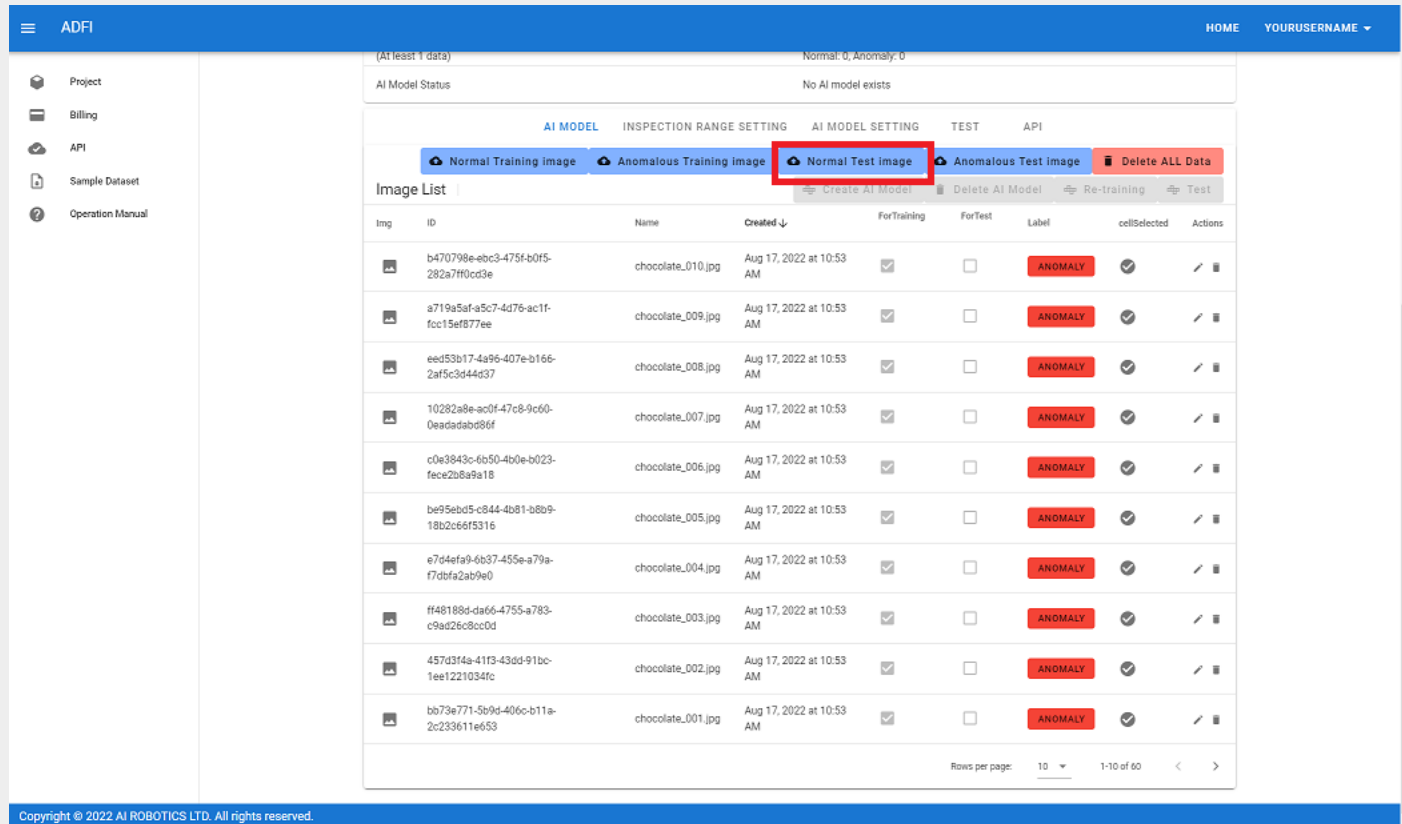
Image List

Img	ID	Name	Created	ForTraining	ForTest	Label	cellSelected	Actions
	b470798e-ebc3-479f-b0f5-282a77f0cd3e	chocolate_010.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	<input checked="" type="checkbox"/>	
	a719a5af-a5c7-4d76-ac1f-fcc15ef877ee	chocolate_009.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	Select	
	eed53b17-4a96-407e-b166-2af5c3d44d37	chocolate_008.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	Select	
	10282a8e-ac0f-47c8-9c60-Deadaab086f	chocolate_007.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	Select	
	c0e3843c-6d50-4b0e-b023-fce2b8a9a18	chocolate_006.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	Select	

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## 2. Preparing the dataset

- Make sure all training anomaly images are marked with a check mark.
- Next, register test images to be used for AI performance verification. Press the "Normal Test image" button.



The screenshot displays the ADFI web interface. On the left is a sidebar with navigation links: Project, Billing, API, Sample Dataset, and Operation Manual. The main content area has a top status bar showing '(At least 1 data)' and 'Normal: 0, Anomaly: 0'. Below this is a section for 'AI Model Status' indicating 'No AI model exists'. A row of buttons includes 'Normal Training image', 'Anomalous Training image', 'Normal Test image' (highlighted with a red box), 'Anomalous Test image', and 'Delete ALL Data'. Below these buttons is the 'Image List' table.

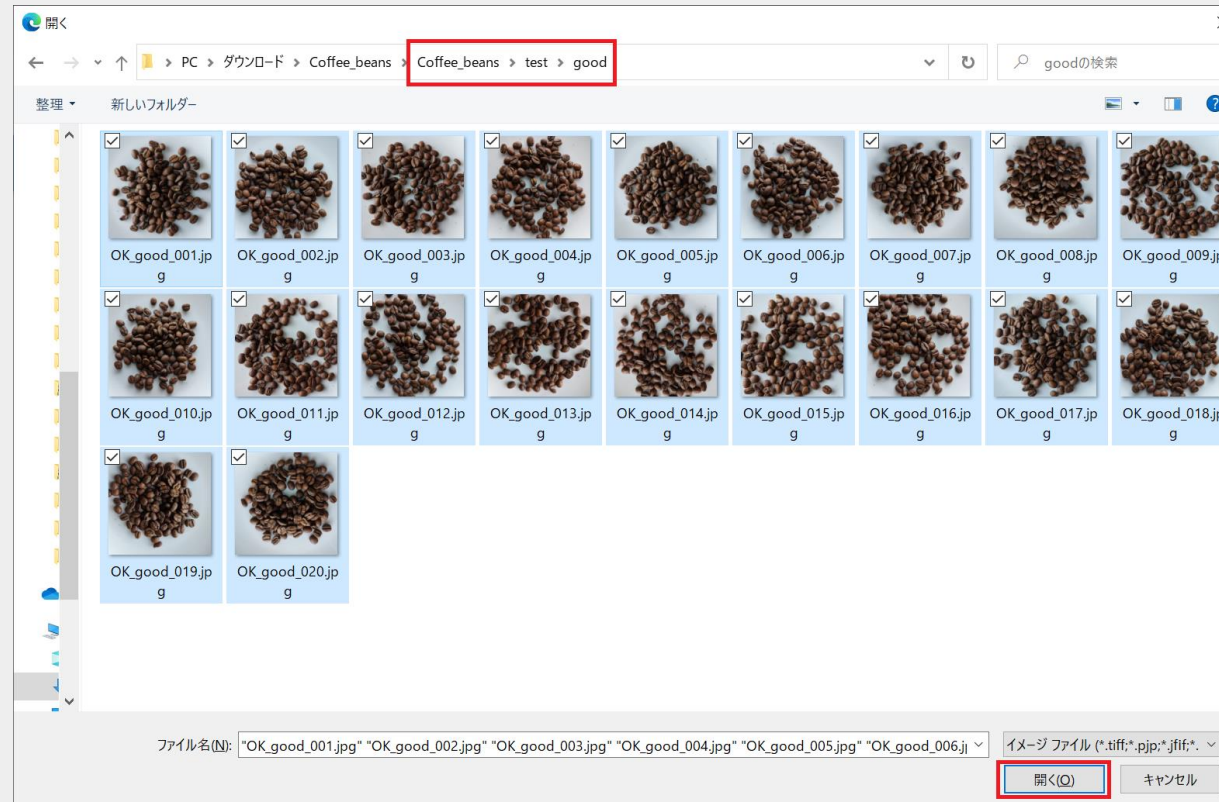
Img	ID	Name	Created ↓	For Training	For Test	Label	cellSelected	Actions
	b470798e-ebc3-475f-b0f5-282a7f0cd3e	chocolate_010.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	<input checked="" type="checkbox"/>	
	a719a5af-a5c7-4d76-ac1f-fcc15ef877ee	chocolate_009.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	<input checked="" type="checkbox"/>	
	eed53b17-4a96-407e-b166-2af5c3d44d37	chocolate_008.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	<input checked="" type="checkbox"/>	
	10282a8e-ac0f-47c8-9c60-0eadaab086f	chocolate_007.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	<input checked="" type="checkbox"/>	
	c0e3843c-6b50-4b0e-b023-fec2b8a9a18	chocolate_006.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	<input checked="" type="checkbox"/>	
	be95ebd5-c844-4b81-b8b9-18b2c6f5316	chocolate_005.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	<input checked="" type="checkbox"/>	
	e7d4afa9-6b37-455e-a79a-f7dbfa2ab9e0	chocolate_004.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	<input checked="" type="checkbox"/>	
	ff48188d-da66-4755-a783-c9ad26c9cc0d	chocolate_003.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	<input checked="" type="checkbox"/>	
	457d314e-41f3-43dd-91bc-1ee1221034fc	chocolate_002.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	<input checked="" type="checkbox"/>	
	bb73e771-5b9d-406c-b11a-2c233611e653	chocolate_001.jpg	Aug 17, 2022 at 10:53 AM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ANOMALY	<input checked="" type="checkbox"/>	

At the bottom right of the table, there is a pagination control: 'Rows per page: 10' and '1-10 of 60'.

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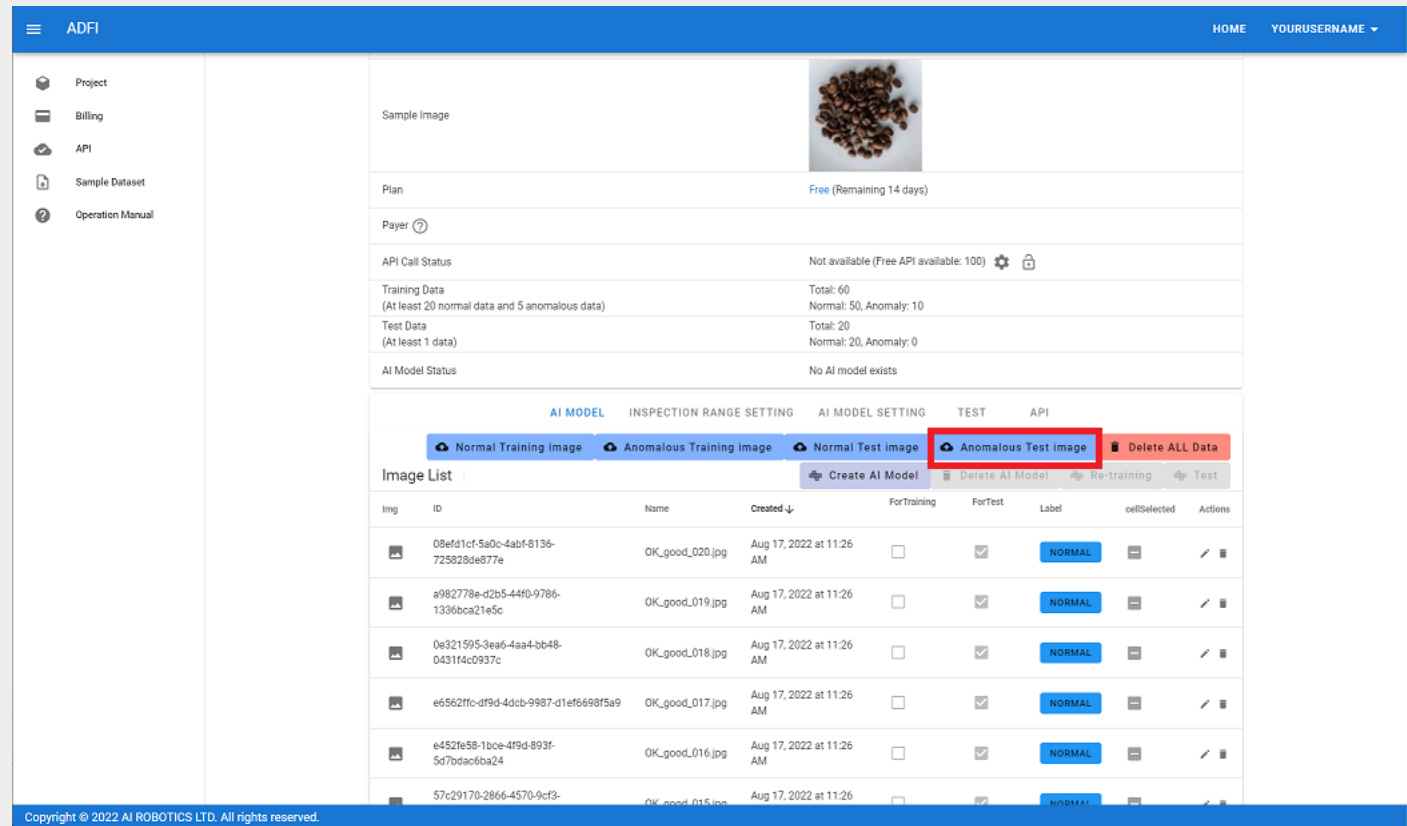
## 2. Preparing the dataset

- Open the **good** folder ( Coffee\_beans -> test -> good ) inside the **test** folder of the sample image dataset.
- Select all the images in the good folder and press the "Open" button.
  - In Windows, you can select all at once with the "Ctrl" button + "A" button.



## 2. Preparing the dataset

- After the upload of the normal image is completed, the normal image for performance verification is added to the image list.
- Finally, register anomalous test images to be used for AI performance verification. Press the "Anomalous Test image" button.

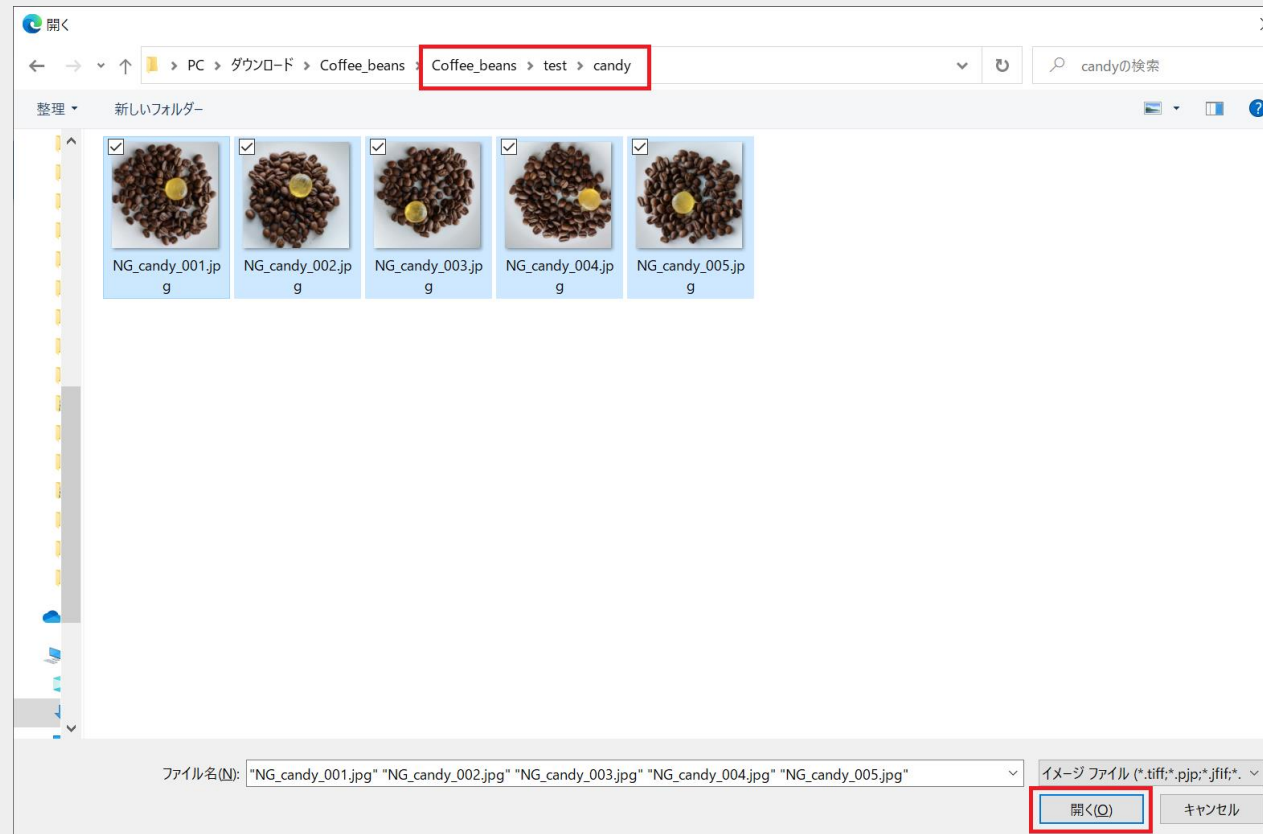


The screenshot displays the ADFI web application interface. The top navigation bar includes a menu icon, the ADFI logo, and user information (HOME, YOURUSERNAME). The left sidebar contains navigation links: Project, Billing, API, Sample Dataset, and Operation Manual. The main content area shows a 'Sample Image' of coffee beans, a 'Plan' section with a 'Free (Remaining 14 days)' status, and a table of API call status and training/test data counts. Below this, the 'AI MODEL' tab is active, showing a row of buttons: 'Normal Training image', 'Anomalous Training image', 'Normal Test image', 'Anomalous Test image' (highlighted with a red box), and 'Delete ALL Data'. The 'Image List' table below contains columns for image ID, name, creation time, and training/test status. The table lists five normal training images, all labeled 'NORMAL'.

Img	ID	Name	Created ↓	ForTraining	ForTest	Label	cellSelected	Actions
	08efd1cf-5a0c-4abf-8136-725828de877e	OK_good_020.jpg	Aug 17, 2022 at 11:26 AM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NORMAL	<input type="checkbox"/>	
	a982778e-d2b5-44f0-9786-1336bca21e5c	OK_good_019.jpg	Aug 17, 2022 at 11:26 AM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NORMAL	<input type="checkbox"/>	
	0e321595-3ea6-4aa4-bb48-0431f4c0937c	OK_good_018.jpg	Aug 17, 2022 at 11:26 AM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NORMAL	<input type="checkbox"/>	
	e6562ffc-df9d-4dcb-9987-d1ef6698f5a9	OK_good_017.jpg	Aug 17, 2022 at 11:26 AM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NORMAL	<input type="checkbox"/>	
	e452fe58-1bce-4f9d-893f-5d7bdac6ba24	OK_good_016.jpg	Aug 17, 2022 at 11:26 AM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NORMAL	<input type="checkbox"/>	
	57c29170-2866-4570-9cf3-	OK_good_015.jpg	Aug 17, 2022 at 11:26 AM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NORMAL	<input type="checkbox"/>	

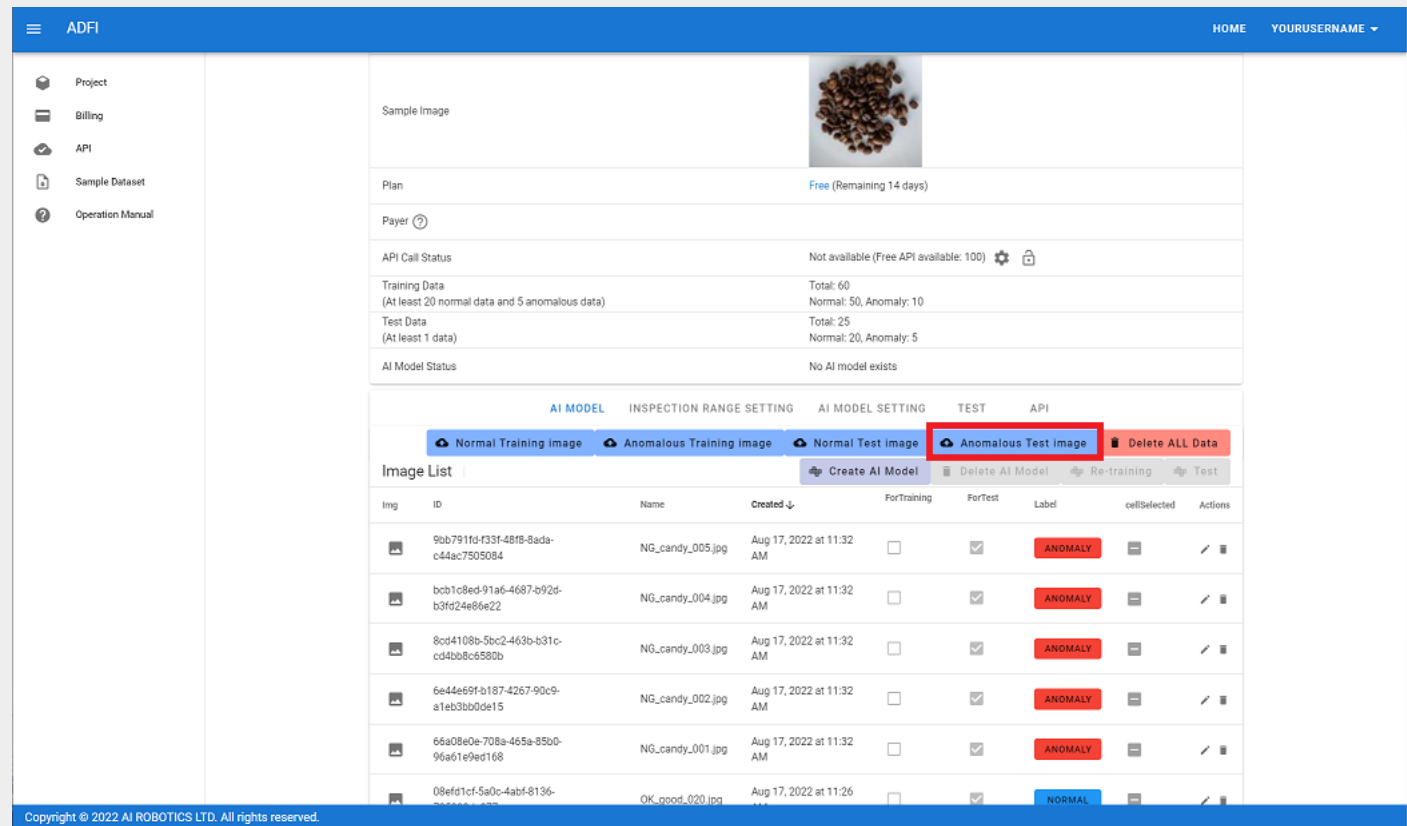
## 2. Preparing the dataset

- Open the **candy** folder (Coffee\_beans -> test -> candy) in the **test** folder of the sample image dataset.
  - This time, candy is not included in the training anomalous images, but ADFI can detect anomalies that have not been trained.
- Select all the images in the candy folder and press the "Open" button.



## 2. Preparing the dataset

- By uploading the anomalous images of candy, the anomalous images for performance verification were added to the image list.
- In addition, add an anomalous images (chocolate) for performance verification. Press the "Anomalous Test image" button.



The screenshot displays the ADFI web interface. The top navigation bar includes a menu icon, the ADFI logo, and links for HOME and YOUR USERNAME. The left sidebar contains links for Project, Billing, API, Sample Dataset, and Operation Manual. The main content area shows a 'Sample Image' of a pile of brown candies. Below this, a table displays project details:

Plan	Free (Remaining 14 days)
Payer	
API Call Status	Not available (Free API available: 100)
Training Data (At least 20 normal data and 5 anomalous data)	Total: 60 Normal: 50, Anomaly: 10
Test Data (At least 1 data)	Total: 25 Normal: 20, Anomaly: 5
AI Model Status	No AI model exists

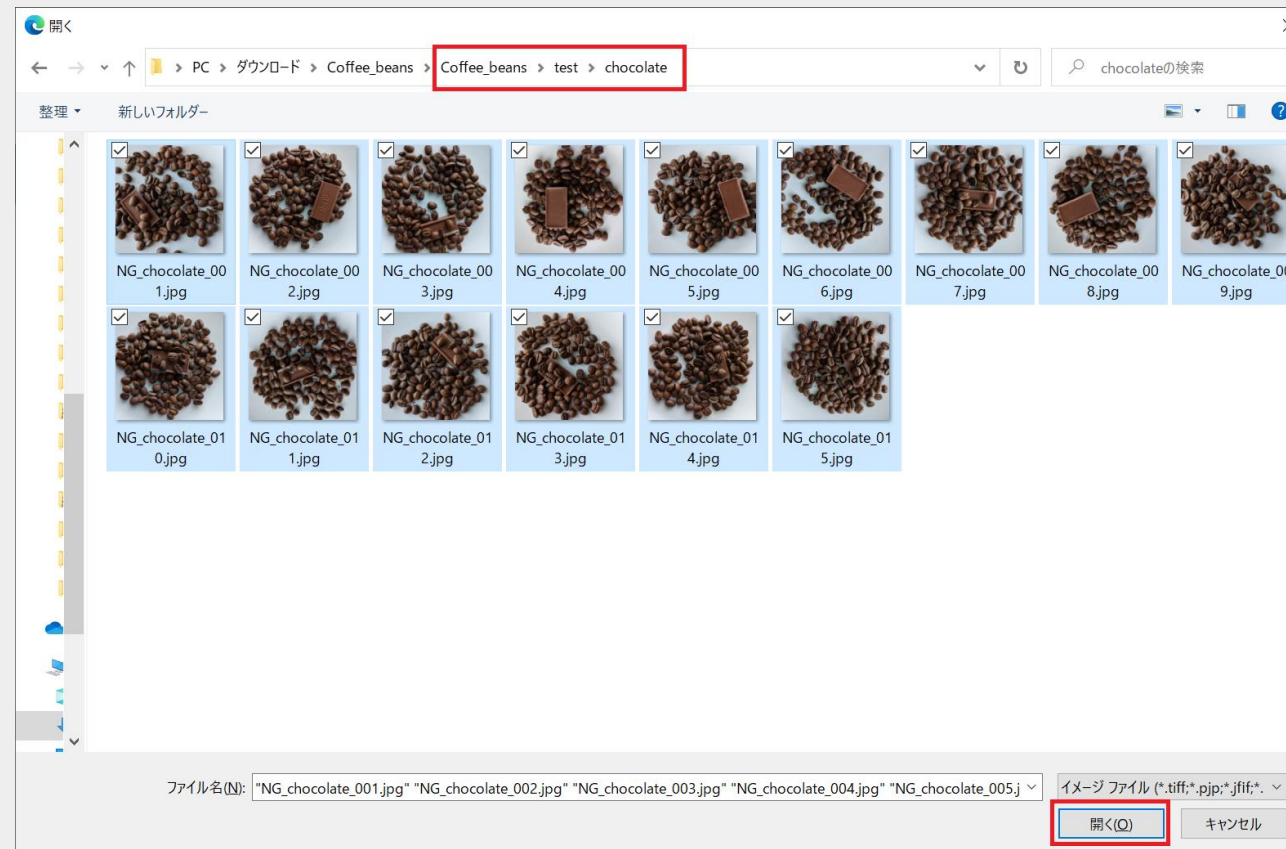
Below the table, there are tabs for AI MODEL, INSPECTION RANGE SETTING, AI MODEL SETTING, TEST, and API. The 'AI MODEL' tab is active, showing buttons for Normal Training image, Anomalous Training image, Normal Test image, Anomalous Test image (highlighted with a red box), and Delete ALL Data. Below these buttons is the 'Image List' table:

Img	ID	Name	Created	ForTraining	ForTest	Label	cellSelected	Actions
	90b7911d-f33f-48f8-8ada-c44ac7505084	NG_candy_005.jpg	Aug 17, 2022 at 11:32 AM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	bcb1c8ed-91a6-4687-b92d-b3fd24e86e22	NG_candy_004.jpg	Aug 17, 2022 at 11:32 AM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	8cd4108b-5bc2-463b-b31c-cd4bb8c6580b	NG_candy_003.jpg	Aug 17, 2022 at 11:32 AM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	6e44e69f-b187-4267-90c9-a1eb3bb0de15	NG_candy_002.jpg	Aug 17, 2022 at 11:32 AM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	66a08e0e-708a-465a-85b0-96a61e9ed168	NG_candy_001.jpg	Aug 17, 2022 at 11:32 AM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	08efd1cf-5a0c-4abf-8136-200000000000	OK_good_020.jpg	Aug 17, 2022 at 11:26 AM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NORMAL	<input type="checkbox"/>	

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## 2. Preparing the dataset

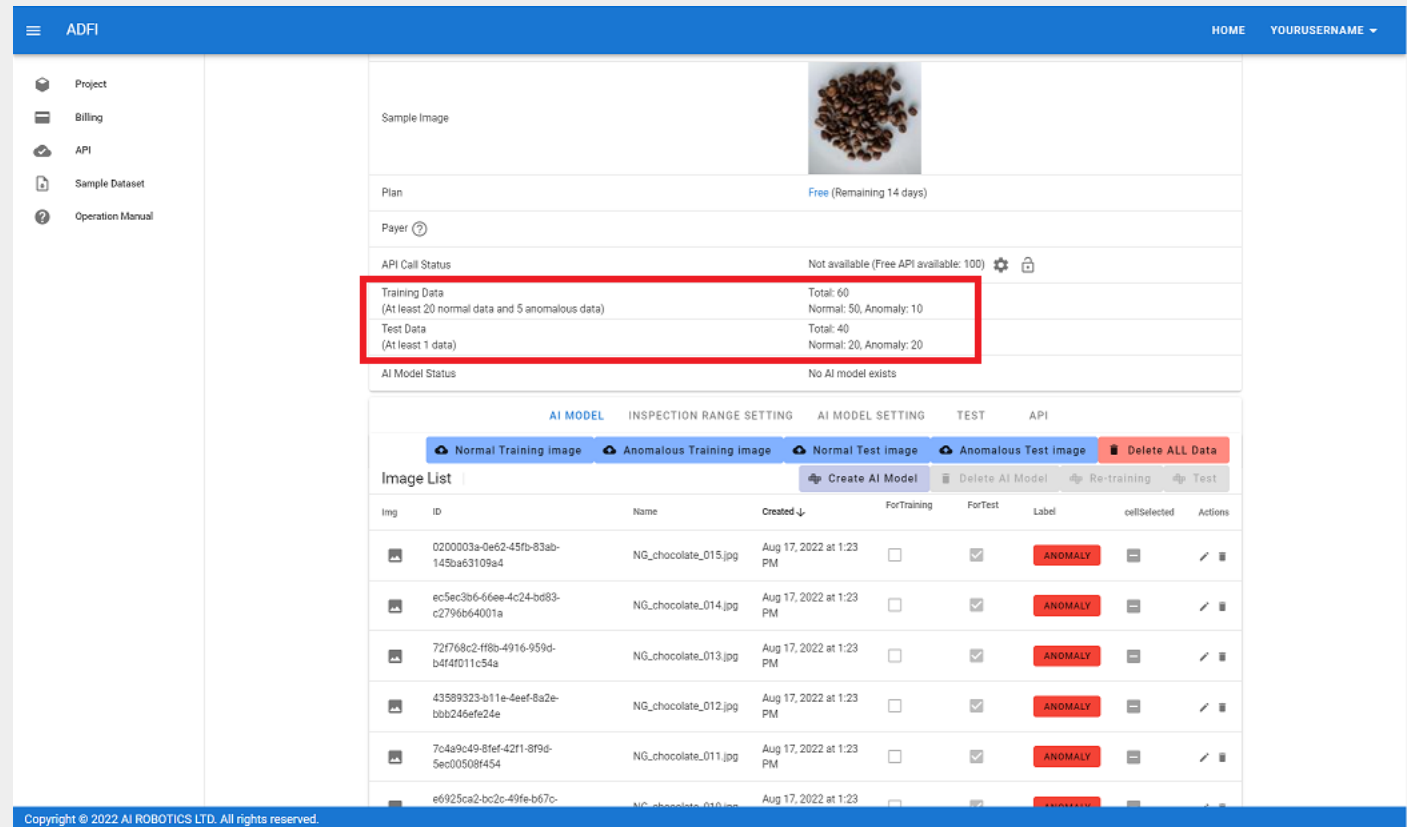
- Open the **chocolate** folder (Coffee\_beans -> test -> chocolate) in the **test** folder of the sample image dataset.
- Select all the images in the chocolate folder and press the "Open" button.





## 2. Preparing the dataset

- By uploading the anomalous images of chocolate, the anomalous images for performance verification were added to the image list.
- Check the number of "Training Data" and "Test Data". These indicate the number of images registered for AI training and performance verification. The dataset is now ready.



The screenshot displays the ADFI web interface. On the left is a sidebar with navigation links: Project, Billing, API, Sample Dataset, and Operation Manual. The main content area shows a 'Sample Image' of chocolate beans. Below this, a 'Plan' section indicates 'Free (Remaining 14 days)'. The 'API Call Status' is 'Not available (Free API available: 100)'. A red box highlights the 'Training Data' and 'Test Data' statistics:

Category	Total	Normal	Anomaly
Training Data (At least 20 normal data and 5 anomalous data)	60	50	10
Test Data (At least 1 data)	40	20	20

Below the statistics, the 'AI Model Status' is 'No AI model exists'. The 'Image List' table shows a list of uploaded images, all labeled as 'ANOMALY'.

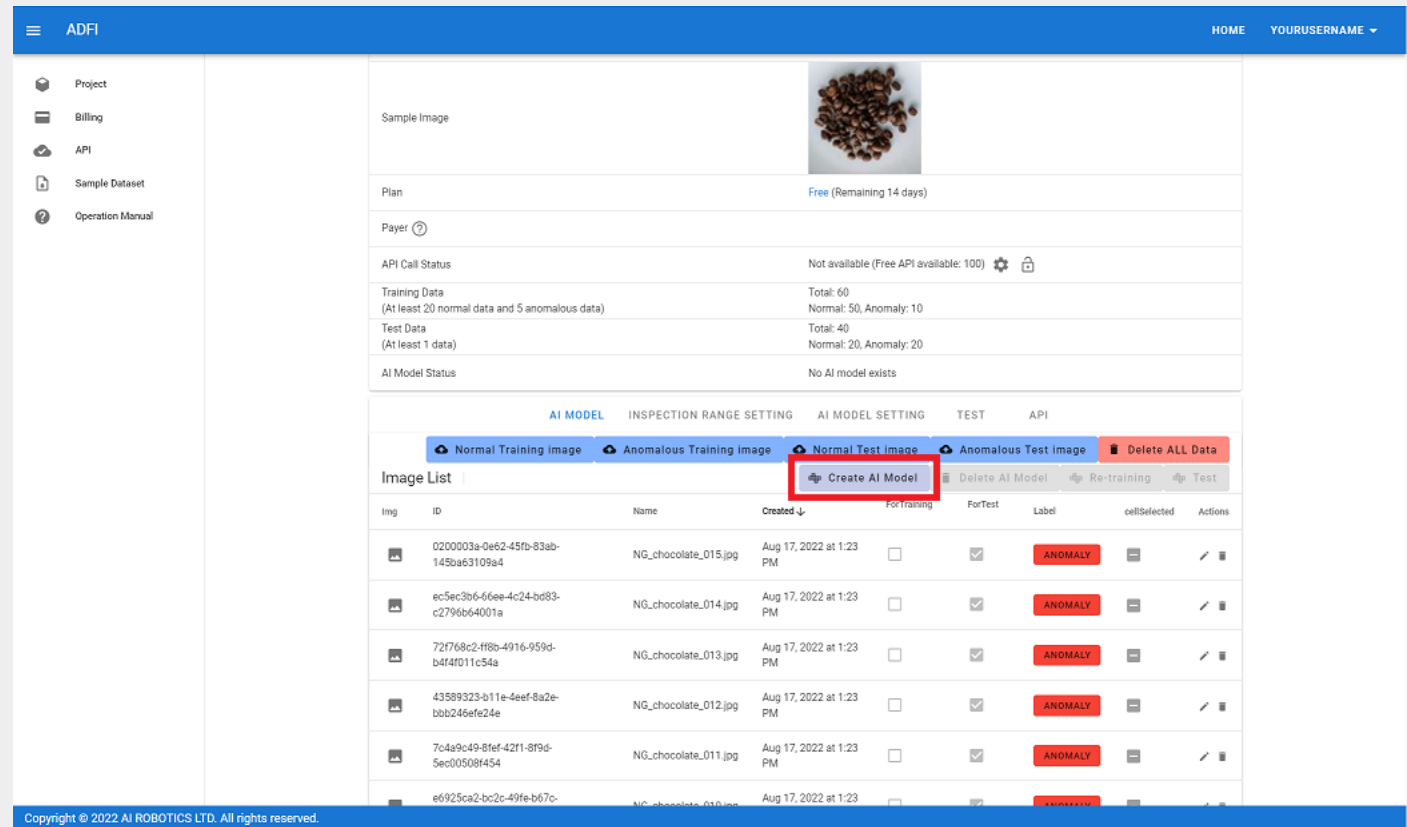
Img	ID	Name	Created	ForTraining	ForTest	Label	cellSelected	Actions
	0200003a-0e62-45fb-83ab-145ba63109a4	NG_chocolate_015.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	ec5ec3b6-66ee-4c24-bd83-c2796b64001a	NG_chocolate_014.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	72f769c2-f88b-4916-959d-b4f4011c54a	NG_chocolate_013.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	43589323-b11e-4eef-8a2e-bbb246efe24e	NG_chocolate_012.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	7c4a9c49-81ef-42f1-8f9d-5ec00508f454	NG_chocolate_011.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	e6925ca2-bc2c-49fe-b67c-	NG_chocolate_010.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	

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# **3. Creation of an image anomaly detection AI**

### 3. Creation of an image anomaly detection AI

- Once the dataset is ready, create an image anomaly detection AI.
- Press "Create AI Model" in the center. Training begins.



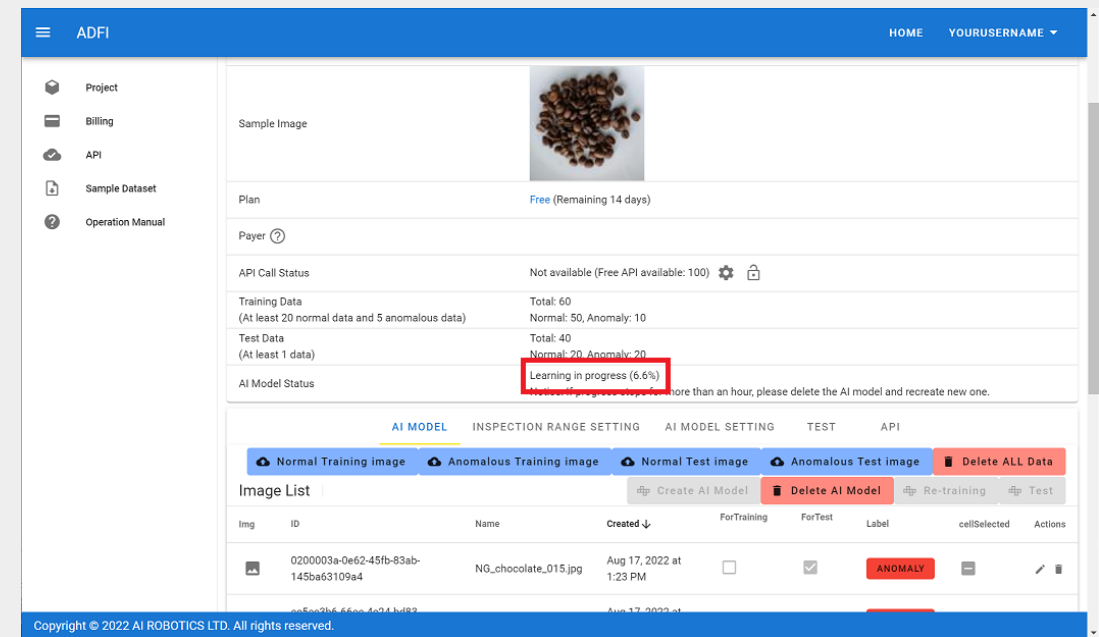
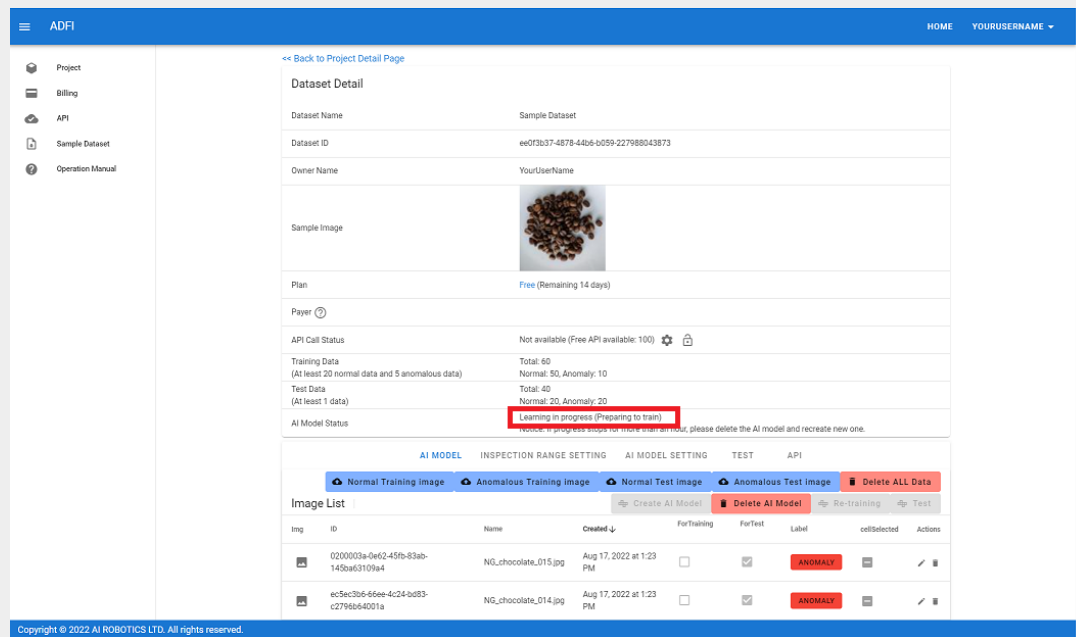
The screenshot displays the ADFI web interface. The top navigation bar includes a menu icon, the text 'ADFI', and links for 'HOME' and 'YOUR USERNAME'. A left sidebar contains navigation links: 'Project', 'Billing', 'API', 'Sample Dataset', and 'Operation Manual'. The main content area shows a 'Sample Image' of coffee beans, a 'Plan' status of 'Free (Remaining 14 days)', and a table of training and test data. Below this, the 'AI MODEL' tab is active, showing a 'Normal Training image', 'Anomalous Training image', 'Normal Test image', and 'Anomalous Test image'. A red box highlights the 'Create AI Model' button. Below the tabs is an 'Image List' table with columns for 'Img', 'ID', 'Name', 'Created', 'For Training', 'For Test', 'Label', 'cellSelected', and 'Actions'. The table contains six rows of data, all labeled 'ANOMALY'.

Img	ID	Name	Created	For Training	For Test	Label	cellSelected	Actions
	0200003a-0e62-45fb-83ab-145ba63109a4	NG_chocolate_015.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	ec5ec3b6-66ee-4c24-bd83-c2796b64001a	NG_chocolate_014.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	72f768c2-f88b-4916-959d-b4f4f011c54a	NG_chocolate_013.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	43589323-b11e-4eef-8a2e-bbb246efe24e	NG_chocolate_012.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	7c4e9c49-8fef-42f1-8f9d-5ec00508f454	NG_chocolate_011.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	e6925ca2-bc2c-49fe-b67c-	NG_chocolate_010.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	

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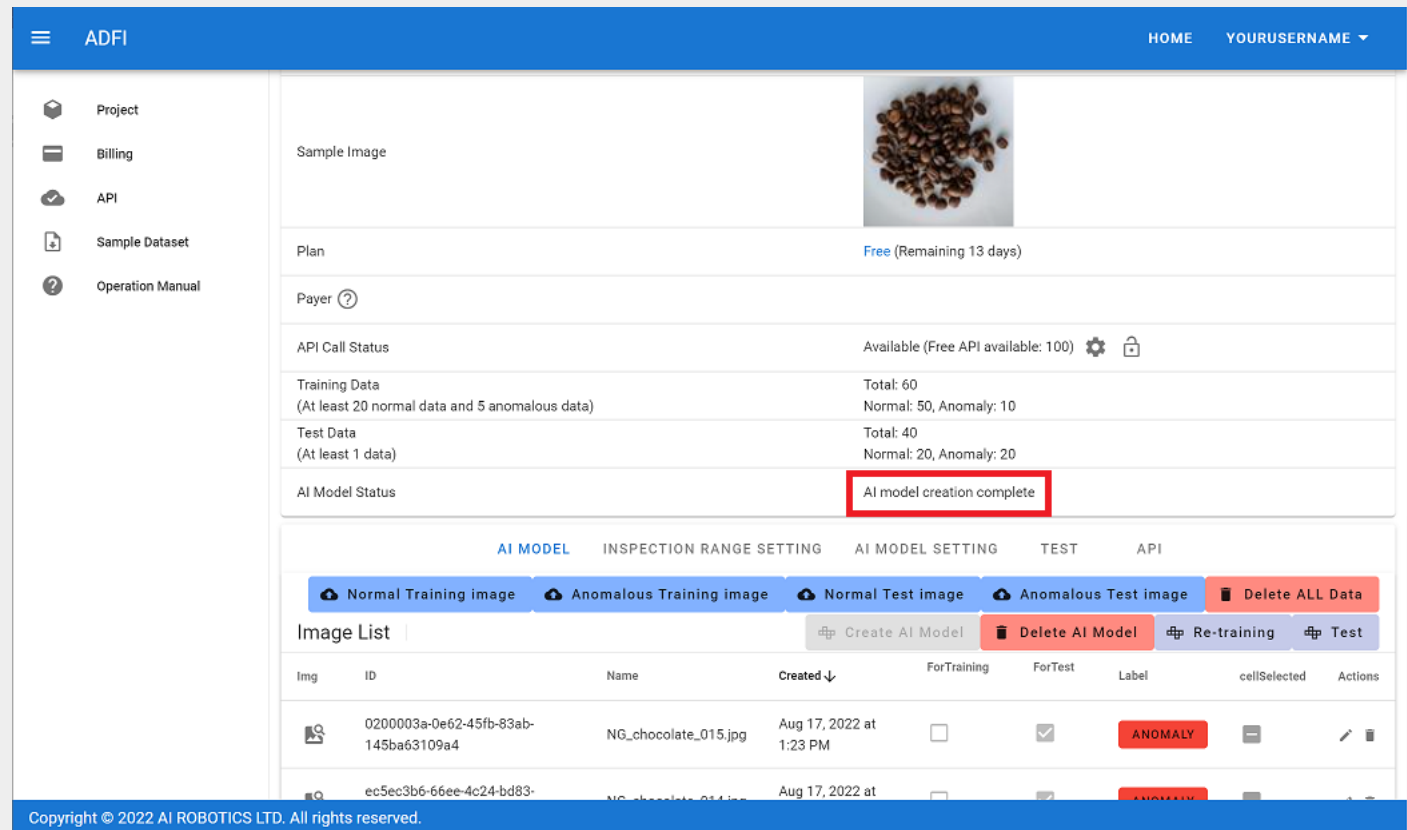
### 3. Creation of an image anomaly detection AI

- When AI learning starts, AI Model Status will show "Learning in progress (Preparing to train)".
- After a while, the learning progress will be displayed like "Learning in progress (6. 6%)".
- Wait for the AI to finish training.
  - AI learning time varies depending on the number of training images. Learning is usually completed in about 15 to 60 minutes.
  - If by any chance the progress has stopped after a few hours, please press "Delete AI Model" and then "Create AI Model" again.



### 3. Creation of an image anomaly detection AI

- When AI learning is completed, "AI model creation complete" is displayed in "AI Model Status".
- The image anomaly detection AI is now created.



The screenshot displays the ADFI web application interface. The top navigation bar is blue with the ADFI logo on the left and 'HOME' and 'YOURUSERNAME' on the right. A left sidebar contains icons for Project, Billing, API, Sample Dataset, and Operation Manual. The main content area shows a 'Sample Image' of coffee beans. Below this, a 'Plan' section indicates 'Free (Remaining 13 days)'. The 'API Call Status' is 'Available (Free API available: 100)'. The 'Training Data' section shows 'Total: 60' (Normal: 50, Anomaly: 10). The 'Test Data' section shows 'Total: 40' (Normal: 20, Anomaly: 20). The 'AI Model Status' is highlighted with a red box and displays 'AI model creation complete'. Below this, there are tabs for 'AI MODEL', 'INSPECTION RANGE SETTING', 'AI MODEL SETTING', 'TEST', and 'API'. The 'AI MODEL' tab is active, showing buttons for 'Normal Training image', 'Anomalous Training image', 'Normal Test image', 'Anomalous Test image', and 'Delete ALL Data'. Below these buttons is an 'Image List' table with columns: Img, ID, Name, Created, ForTraining, ForTest, Label, cellSelected, and Actions. The table contains two rows of data, both labeled 'ANOMALY'.

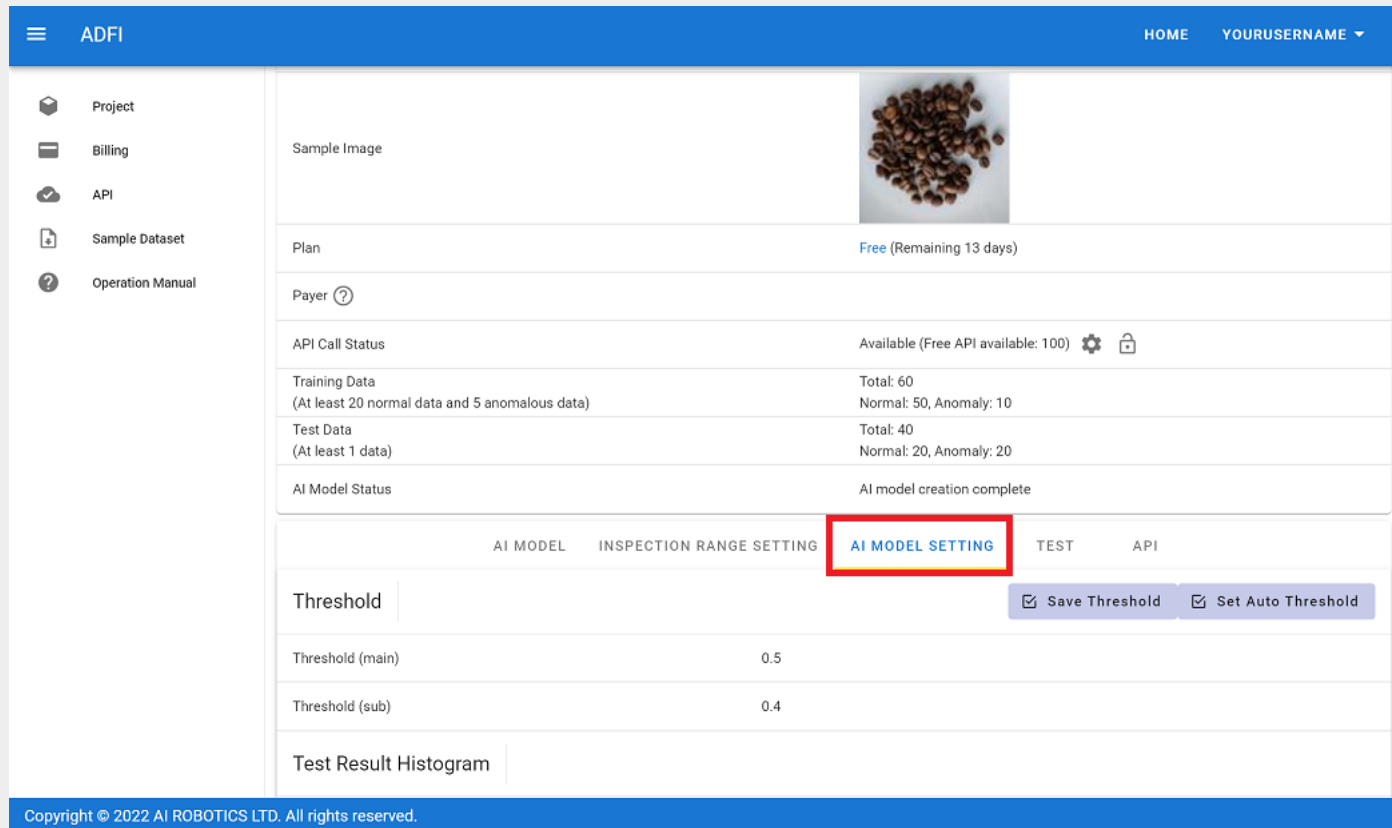
Img	ID	Name	Created	ForTraining	ForTest	Label	cellSelected	Actions
	0200003a-0e62-45fb-83ab-145ba63109a4	NG_chocolate_015.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	
	ec5ec3b6-66ee-4c24-bd83-	NG_chocolate_015.jpg	Aug 17, 2022 at	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	

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## **4. Performance verification of the AI**

## 4. Performance verification of the AI

- After AI creation is complete (when "AI Model Status" is "AI model creation complete"), you can use the image you just registered for test to verify the AI's performance.
- First, press the "AI MODEL SETTING" tab. Here you can change the thresholds of anomaly score or check the histogram of anomaly score for the test images.



The screenshot shows the ADFI web interface. The top navigation bar is blue with the ADFI logo, a menu icon, and user information (HOME, YOURUSERNAME). The left sidebar contains links for Project, Billing, API, Sample Dataset, and Operation Manual. The main content area displays a 'Sample Image' of coffee beans. Below the image, a table shows model details: Plan (Free, 13 days remaining), Payer (?), API Call Status (Available, 100 calls), Training Data (Total: 60, Normal: 50, Anomaly: 10), Test Data (Total: 40, Normal: 20, Anomaly: 20), and AI Model Status (AI model creation complete). At the bottom, the 'AI MODEL SETTING' tab is selected and highlighted with a red box. It contains a 'Threshold' section with 'Threshold (main)' set to 0.5 and 'Threshold (sub)' set to 0.4. There are buttons for 'Save Threshold' and 'Set Auto Threshold'. A 'Test Result Histogram' section is visible at the bottom of the tab.

Field	Value
Plan	Free (Remaining 13 days)
Payer	?
API Call Status	Available (Free API available: 100)
Training Data	Total: 60 (At least 20 normal data and 5 anomalous data) Normal: 50, Anomaly: 10
Test Data	Total: 40 (At least 1 data) Normal: 20, Anomaly: 20
AI Model Status	AI model creation complete

**AI MODEL SETTING**

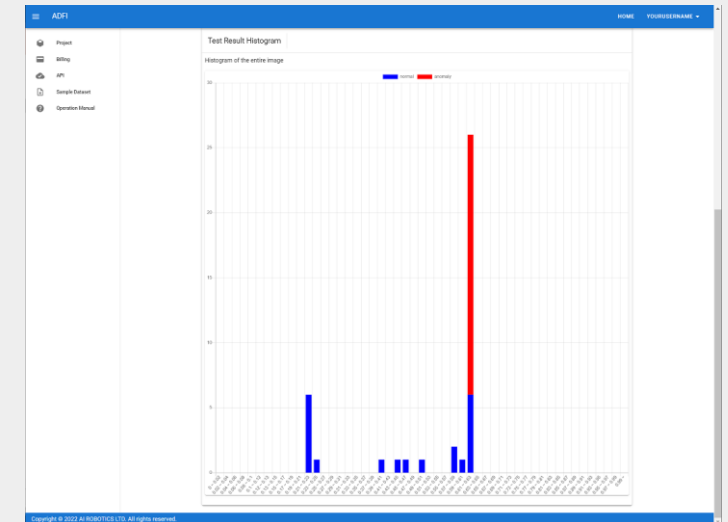
Threshold

Threshold (main): 0.5

Threshold (sub): 0.4

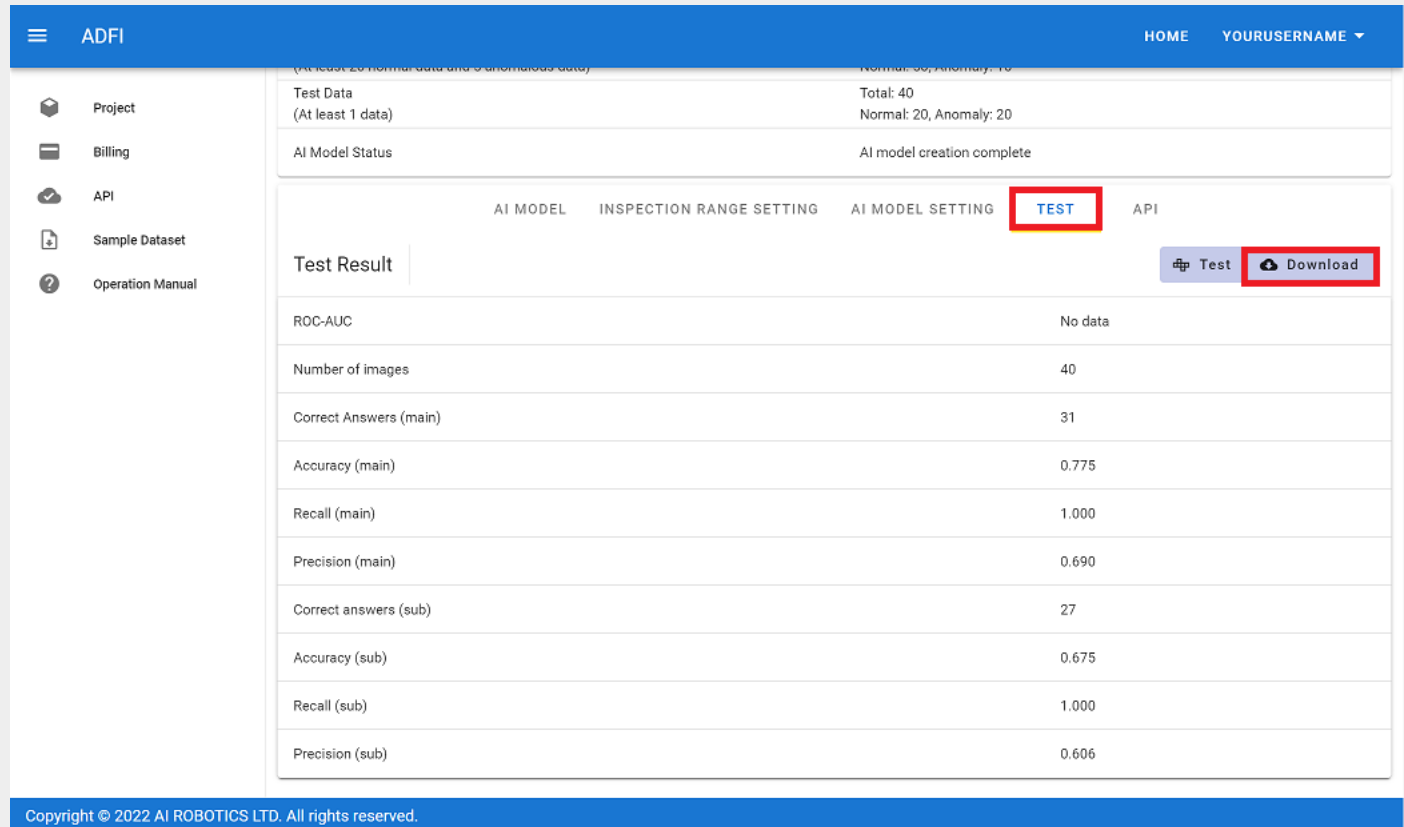
Test Result Histogram

Histogram



## 4. Performance verification of the AI

- Click the "TEST" tab. A summary of test results at the current threshold (default threshold) is displayed.
- By pressing the "Download" button, you can download a CSV file of detailed information (a list of detection results by the AI for each image).



The screenshot displays the ADFI web application interface. The top navigation bar is blue with the ADFI logo on the left and 'HOME' and 'YOURUSERNAME' on the right. A left sidebar contains icons for Project, Billing, API, Sample Dataset, and Operation Manual. The main content area has a header with tabs: AI MODEL, INSPECTION RANGE SETTING, AI MODEL SETTING, TEST (highlighted with a red box), and API. Below the tabs, there's a 'Test Result' section with a 'Test' button and a 'Download' button (highlighted with a red box). The test results are shown in a table:

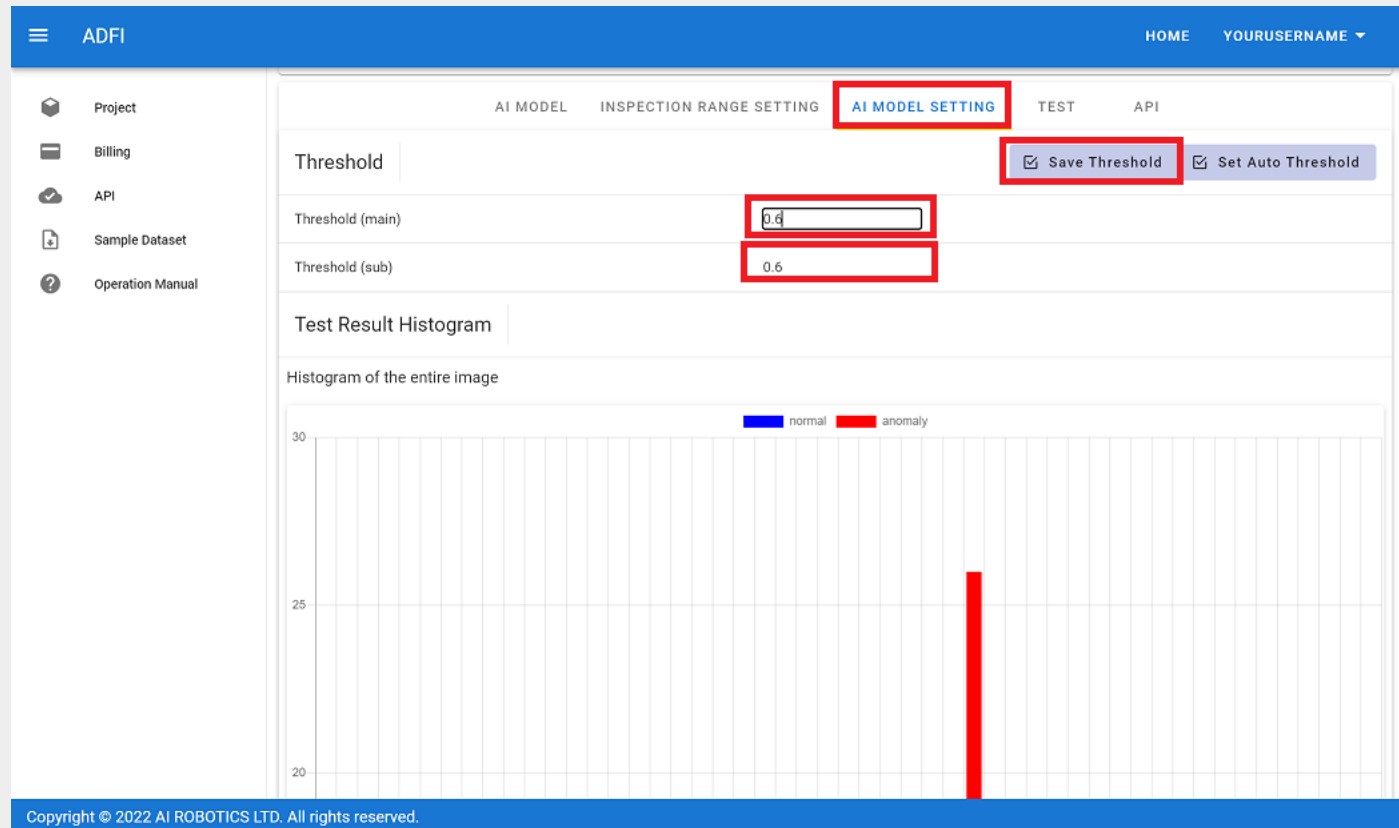
(At least 20 normal data and 5 anomalous data)		Normal: 20, Anomaly: 10
Test Data (At least 1 data)	Total: 40 Normal: 20, Anomaly: 20	
AI Model Status	AI model creation complete	
Test Result		
ROC-AUC	No data	
Number of images	40	
Correct Answers (main)	31	
Accuracy (main)	0.775	
Recall (main)	1.000	
Precision (main)	0.690	
Correct answers (sub)	27	
Accuracy (sub)	0.675	
Recall (sub)	1.000	
Precision (sub)	0.606	

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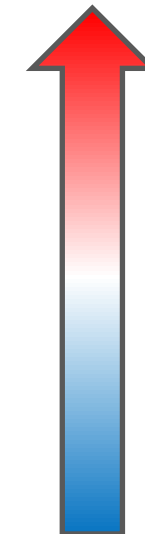
## 4. Performance verification of the AI

- Click the "AI MODEL SETTING" tab again. Change the thresholds to any value by referring to the CSV file downloaded earlier and the histogram at the bottom. Two thresholds ("main" and "sub") can be set.
- After entering the values, press the "Save Threshold" button, and the entered values will be reflected in the thresholds.



How to use two thresholds

High anomaly score



Anomaly

← main threshold

Not Clear

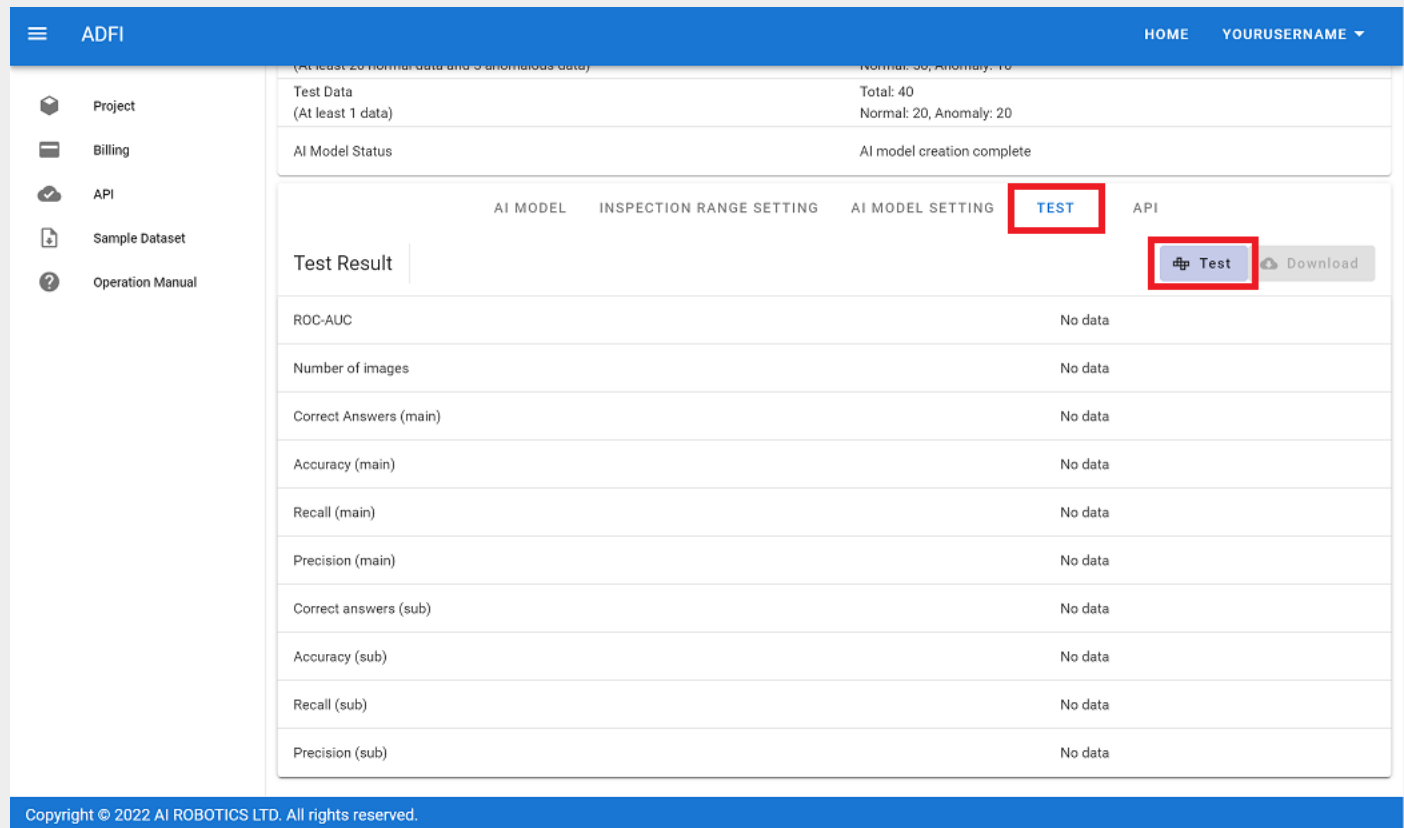
← sub threshold

Normal

Low anomaly score

## 4. Performance verification of the AI

- Click the "TEST" tab. The Test results are "No data" because the threshold has been changed.
- If you press the "TEST" button on the right side, AI verification will be executed again with the changed thresholds.



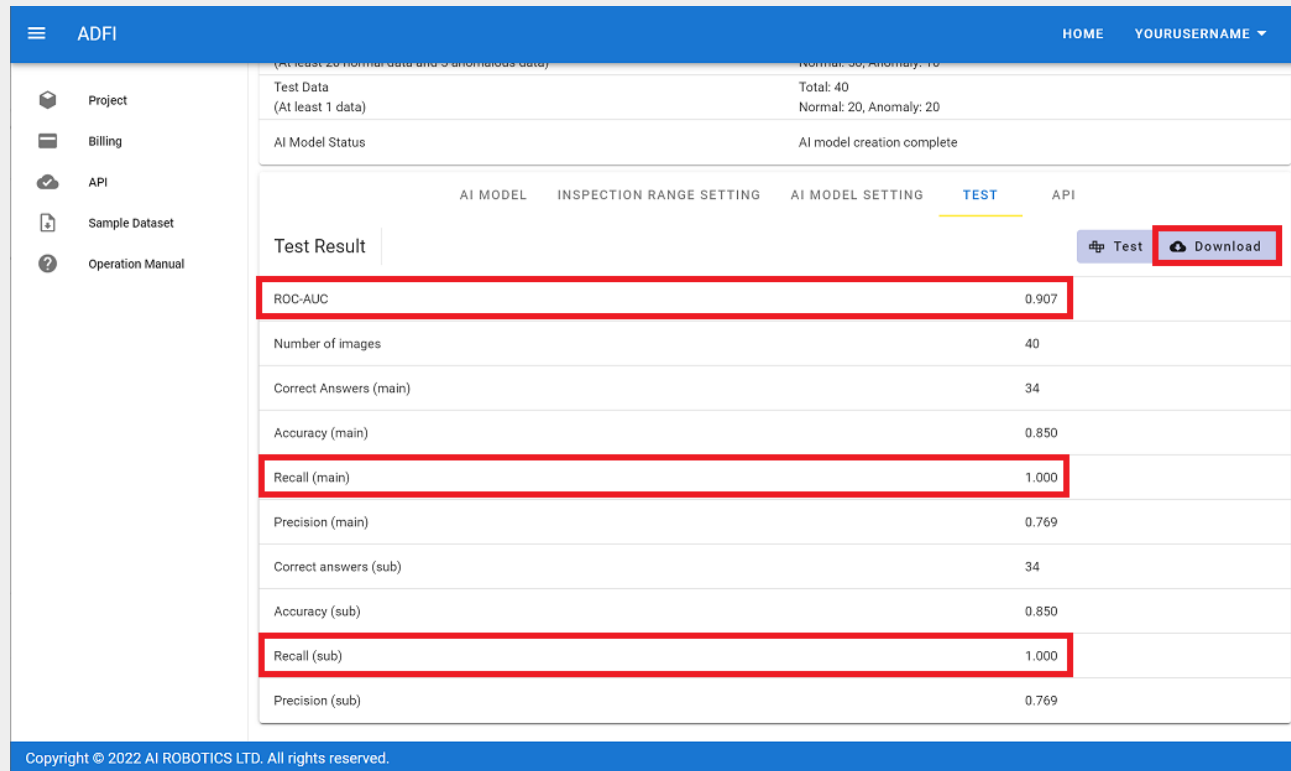
The screenshot displays the ADFI web application interface. The top navigation bar is blue with the ADFI logo on the left and 'HOME' and 'YOURUSERNAME' on the right. A left sidebar contains icons and labels for 'Project', 'Billing', 'API', 'Sample Dataset', and 'Operation Manual'. The main content area has a sub-header with tabs: 'AI MODEL', 'INSPECTION RANGE SETTING', 'AI MODEL SETTING', 'TEST' (highlighted with a red box), and 'API'. Below the tabs, there's a 'Test Result' section. To the right of this section is a 'Test' button (highlighted with a red box) and a 'Download' button. The 'Test Result' section contains a table with 12 rows of performance metrics, all showing 'No data'.

Test Result	
ROC-AUC	No data
Number of images	No data
Correct Answers (main)	No data
Accuracy (main)	No data
Recall (main)	No data
Precision (main)	No data
Correct answers (sub)	No data
Accuracy (sub)	No data
Recall (sub)	No data
Precision (sub)	No data

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## 4. Performance verification of the AI

- The test results after changing the thresholds are displayed. Especially ROC-AUC and Recall are important.
  - ROC-AUC: AI discrimination performance value (1.0 is the highest value)
  - Recall: Recall rate (1.0 means zero oversight of anomalies)
- By pressing the "Download" button on the right, you can download the CSV file of the changed thresholds.

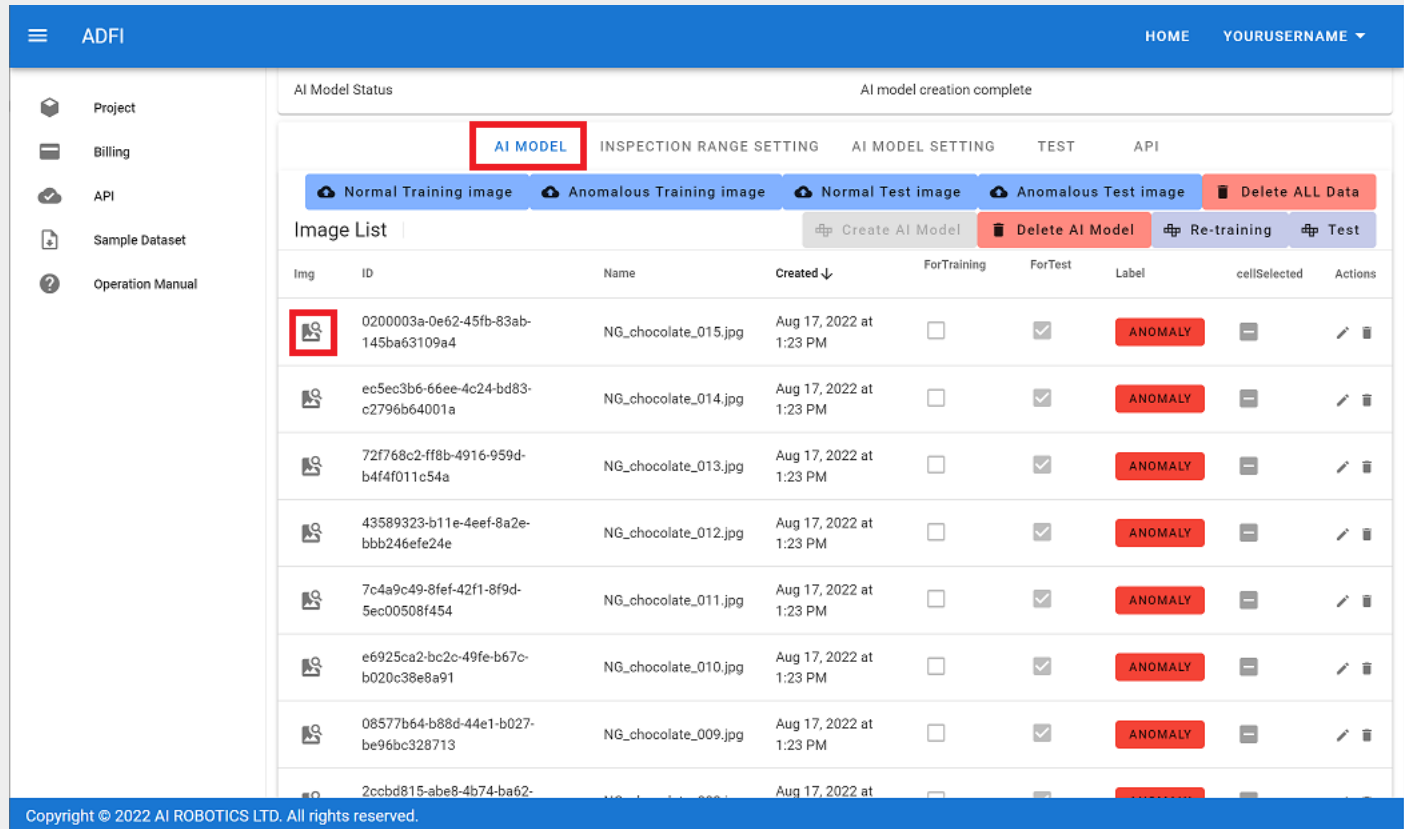


ADFI		HOME	YOURUSERNAME ▾
Project	(At least 20 Normal data and 5 Anomalous data)		
Billing	Normal: 30, Anomaly: 10		
API	Test Data	Total: 40	
Sample Dataset	(At least 1 data)	Normal: 20, Anomaly: 20	
Operation Manual	AI Model Status	AI model creation complete	
AI MODEL   INSPECTION RANGE SETTING   AI MODEL SETTING <b>TEST</b> API			
Test Result		Test	Download
ROC-AUC	0.907		
Number of images	40		
Correct Answers (main)	34		
Accuracy (main)	0.850		
Recall (main)	1.000		
Precision (main)	0.769		
Correct answers (sub)	34		
Accuracy (sub)	0.850		
Recall (sub)	1.000		
Precision (sub)	0.769		

























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## 4. Performance verification of the AI

- Show a heatmap for each image.
- In the "AI MODEL" tab, press the icon on the left side of an anomalous test image ("ForTest" is a checkmark and "Label" is "ANOMALY").



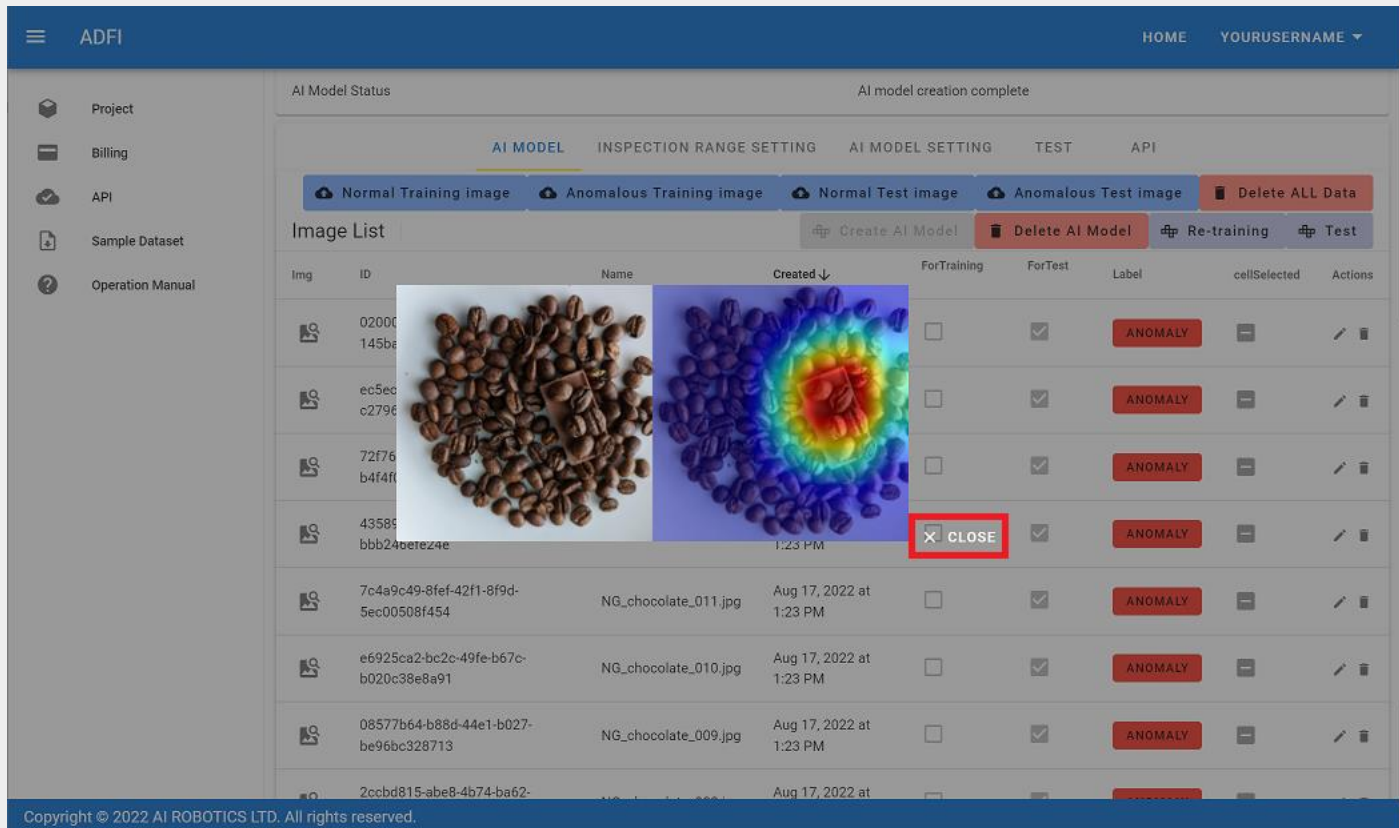
The screenshot displays the ADFI web interface. The top navigation bar includes a menu icon, the text "ADFI", and links for "HOME" and "YOURUSERNAME". The left sidebar contains a "Project" section with links to "Project", "Billing", "API", "Sample Dataset", and "Operation Manual". The main content area is titled "AI Model Status" and "AI model creation complete". It features a tabbed interface with "AI MODEL" selected, alongside "INSPECTION RANGE SETTING", "AI MODEL SETTING", "TEST", and "API". Below the tabs are buttons for "Normal Training image", "Anomalous Training image", "Normal Test image", "Anomalous Test image", and "Delete ALL Data". The "Image List" section includes a "Create AI Model" button, a "Delete AI Model" button, and "Re-training" and "Test" buttons. A table lists images with columns: "Img", "ID", "Name", "Created", "ForTraining", "ForTest", "Label", "cellSelected", and "Actions". The first row is highlighted with a red box around the "Img" icon. The table contains 8 rows of chocolate images, all labeled "ANOMALY".

Img	ID	Name	Created	ForTraining	ForTest	Label	cellSelected	Actions
	0200003a-0e62-45fb-83ab-145ba63109a4	NG_chocolate_015.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	 
	ec5ec3b6-66ee-4c24-bd83-c2796b64001a	NG_chocolate_014.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	 
	72f768c2-ff8b-4916-959d-b4f4f011c54a	NG_chocolate_013.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	 
	43589323-b11e-4eef-8a2e-bbb246efe24e	NG_chocolate_012.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	 
	7c4a9c49-8fef-42f1-8f9d-5ec00508f454	NG_chocolate_011.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	 
	e6925ca2-bc2c-49fe-b67c-b020c38e8a91	NG_chocolate_010.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	 
	08577b64-b88d-44e1-b027-be96bc328713	NG_chocolate_009.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	 
	2ccbd815-abe8-4b74-ba62-	NG_chocolate_008.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	<input type="checkbox"/>	 










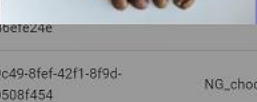








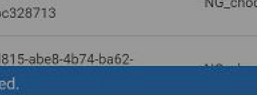





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## 4. Performance verification of the AI

- A heat map inspected by the created AI is displayed.
  - The red area is the attention region. Represents the area that AI focused on when detecting it as an anomaly.
  - In the case of a normal image, there are no anomalous areas, so the attention area spreads thinly over the entire image without being concentrated.
- After confirming, click "CLOSE" at the bottom right.

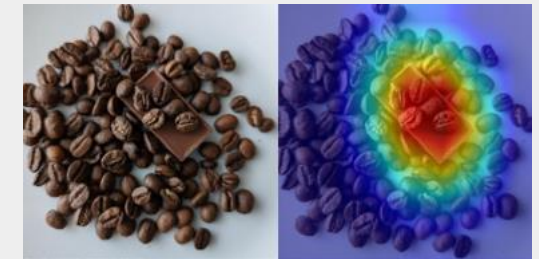


The screenshot shows the ADFI web interface. The top navigation bar includes a menu icon, the ADFI logo, and links for HOME and YOUR USERNAME. The left sidebar contains links for Project, Billing, API, Sample Dataset, and Operation Manual. The main content area is titled 'AI Model Status' and shows 'AI model creation complete'. Below this, there are tabs for AI MODEL, INSPECTION RANGE SETTING, AI MODEL SETTING, TEST, and API. The AI MODEL tab is active, displaying buttons for Normal Training image, Anomalous Training image, Normal Test image, Anomalous Test image, and Delete ALL Data. Below these buttons is an 'Image List' table. The table has columns for Img, ID, Name, Created, For Training, For Test, Label, Cell Selected, and Actions. A modal window is open, showing a comparison between a normal image (coffee beans) and its corresponding heat map. The heat map shows a concentrated red area in the center, indicating an anomaly. A 'CLOSE' button is visible in the bottom right corner of the modal.

Img	ID	Name	Created	For Training	For Test	Label	Cell Selected	Actions
	02000145ba			<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	-	 
	ec5ec2796			<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	-	 
	72f76b4f4f			<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	-	 
	43585bbb24betezae		1:23 PM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	-	 
	7c4a9c49-8fef-42f1-8f9d-5ec00508f454	NG_chocolate_011.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	-	 
	e6925ca2-bc2c-49fe-b67c-b020c38e8a91	NG_chocolate_010.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	-	 
	08577b64-b88d-44e1-b027-be96bc328713	NG_chocolate_009.jpg	Aug 17, 2022 at 1:23 PM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	-	 
	2ccbd815-abe8-4b74-ba62-		Aug 17, 2022 at	<input type="checkbox"/>	<input checked="" type="checkbox"/>	ANOMALY	-	 

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Anomaly



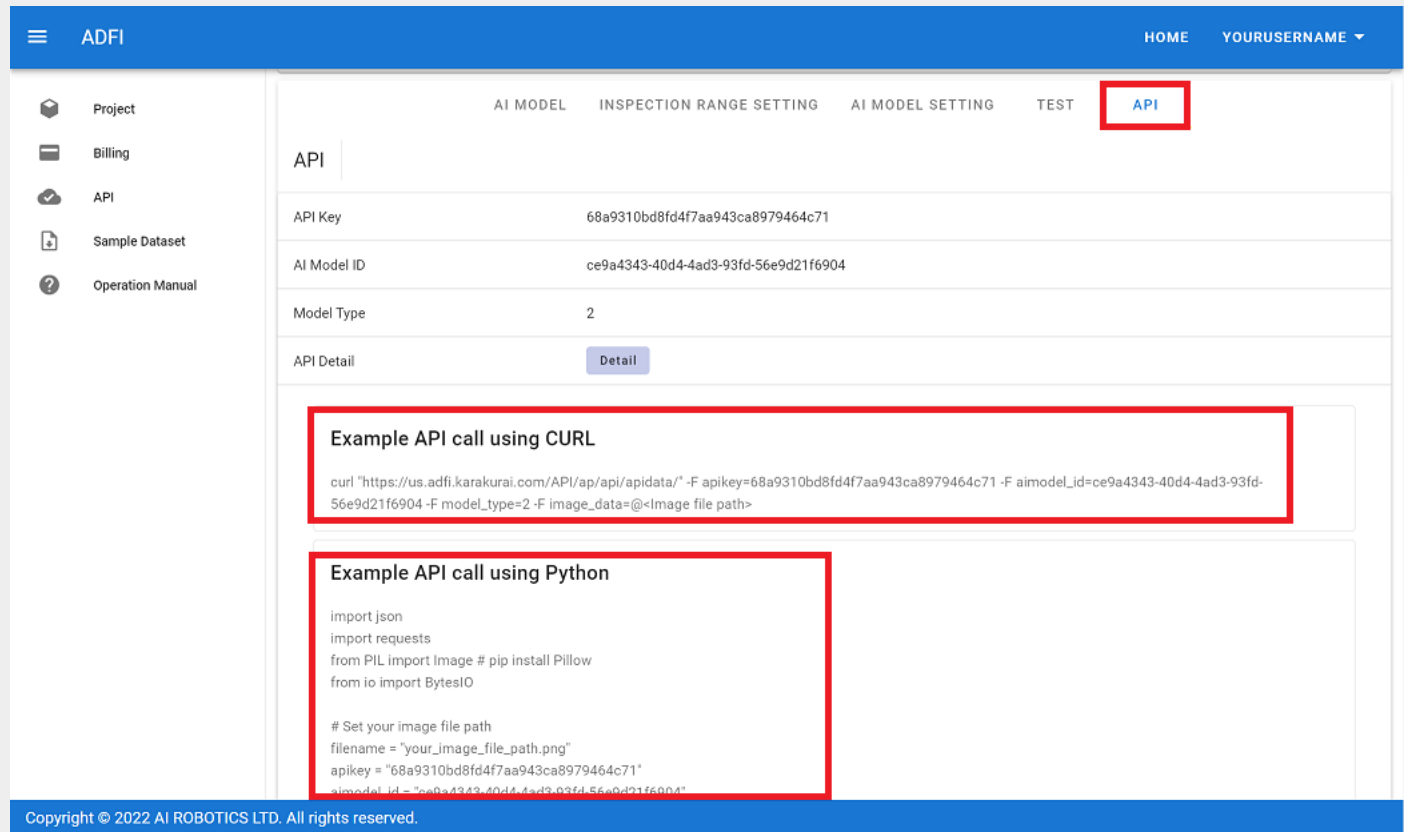
Normal



# **5. Supplementary information**

# Use of the AI from your systems

- ADFI provides APIs so that created AI can be used from your systems.
- Click the "API" tab. Sample codes for API calls are displayed at the bottom.
  - In the case of the free plan, there is an upper limit on the number of times API can be used.



The screenshot displays the ADFI web application interface. The top navigation bar is blue with a hamburger menu icon, the text "ADFI", and links for "HOME" and "YOURUSERNAME". A left sidebar contains icons and labels for "Project", "Billing", "API", "Sample Dataset", and "Operation Manual". The main content area has a sub-navigation bar with tabs: "AI MODEL", "INSPECTION RANGE SETTING", "AI MODEL SETTING", "TEST", and "API". The "API" tab is selected and highlighted with a red box. Below the tabs, the "API" section shows a table with the following data:

API Key	68a9310bd8fd4f7aa943ca8979464c71
AI Model ID	ce9a4343-40d4-4ad3-93fd-56e9d21f6904
Model Type	2

Below the table, there is an "API Detail" section with a "Detail" button. Two red boxes highlight sample code snippets:

**Example API call using CURL**

```
curl "https://us.adfi.karakurai.com/API/ap/api/apidata/" -F apikey=68a9310bd8fd4f7aa943ca8979464c71 -F aimodel_id=ce9a4343-40d4-4ad3-93fd-56e9d21f6904 -F model_type=2 -F image_data=@<Image file path>
```

**Example API call using Python**

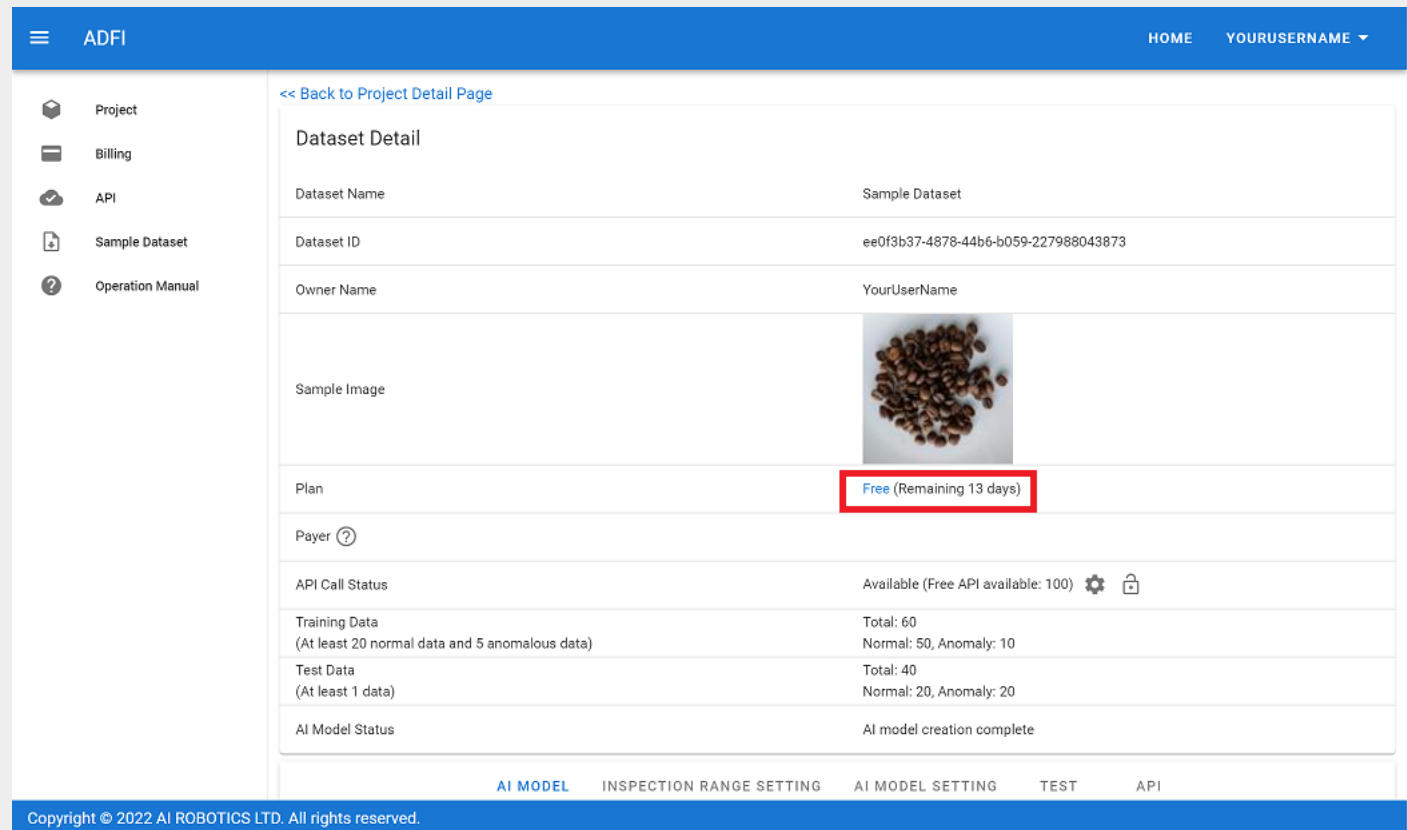
```
import json
import requests
from PIL import Image # pip install Pillow
from io import BytesIO

# Set your image file path
filename = "your_image_file_path.png"
apikey = "68a9310bd8fd4f7aa943ca8979464c71"
aimodel_id = "ce9a4343-40d4-4ad3-93fd-56e9d21f6904"
```

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# Change to paid plan

- In free plan, a dataset is automatically deleted at the end of the free trial period.
  - "Remaining ● days" is the remaining number of days for free trial. The number of days is set for each dataset.
- When using the created AI from your system, press "Free" in the "Plan" to move to the plan change page. Please change the dataset to a paid plan there. (Credit card registration is required.)




ADF I

HOME YOURUSERNAME

<< Back to Project Detail Page

### Dataset Detail

Dataset Name	Sample Dataset
Dataset ID	ee0f3b37-4878-44b6-b059-227988043873
Owner Name	YourUserName
Sample Image	
Plan	<a href="#">Free (Remaining 13 days)</a>
Payer ?	
API Call Status	Available (Free API available: 100) ⚙️ 🔒
Training Data (At least 20 normal data and 5 anomalous data)	Total: 60 Normal: 50, Anomaly: 10
Test Data (At least 1 data)	Total: 40 Normal: 20, Anomaly: 20
AI Model Status	AI model creation complete

AI MODEL INSPECTION RANGE SETTING AI MODEL SETTING TEST API

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- For details on ADFI operation and how to use the created AI from your systems, please refer to the operation manual.
- Operation manual URL: <https://adfi.jp/manual/>