

# **Visual Inspection Application for ADFI User Manual**

June 2023 edition

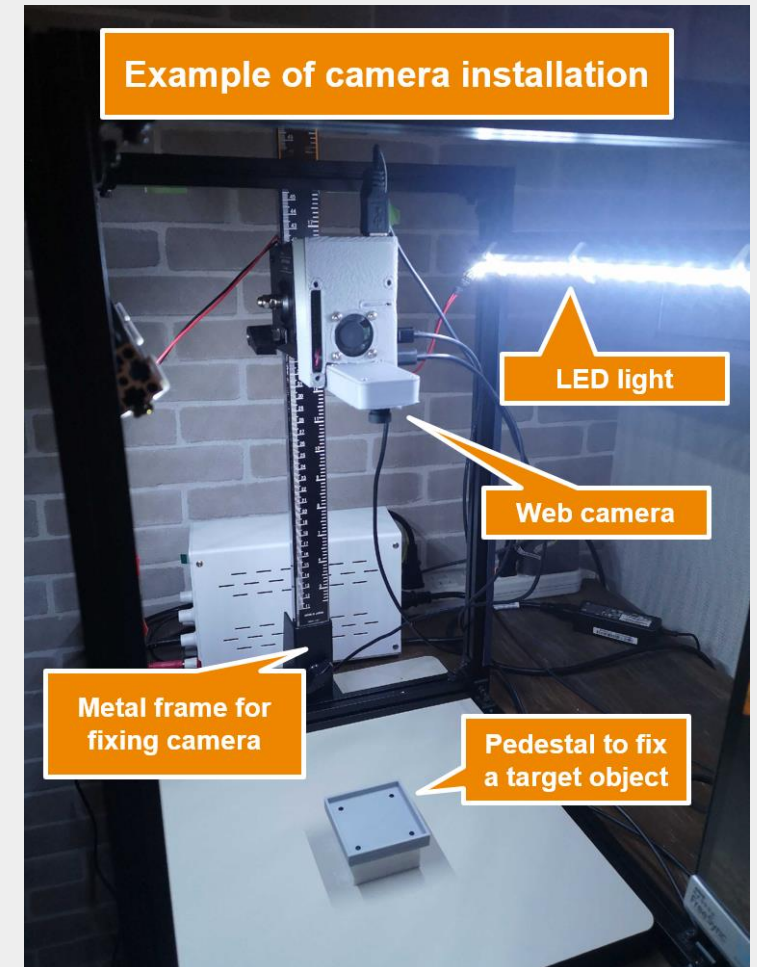
**AI Robotics Ltd.**

# Overview of Visual Inspection Application for ADFI

This application is a software that automates visual inspections and foreign matter inspections in factories.

All you have to do is prepare an inexpensive web camera and a PC (no GPU required) and you can start inspection immediately.

When inspection, as shown in the right photo, please fix a web camera and a target object.

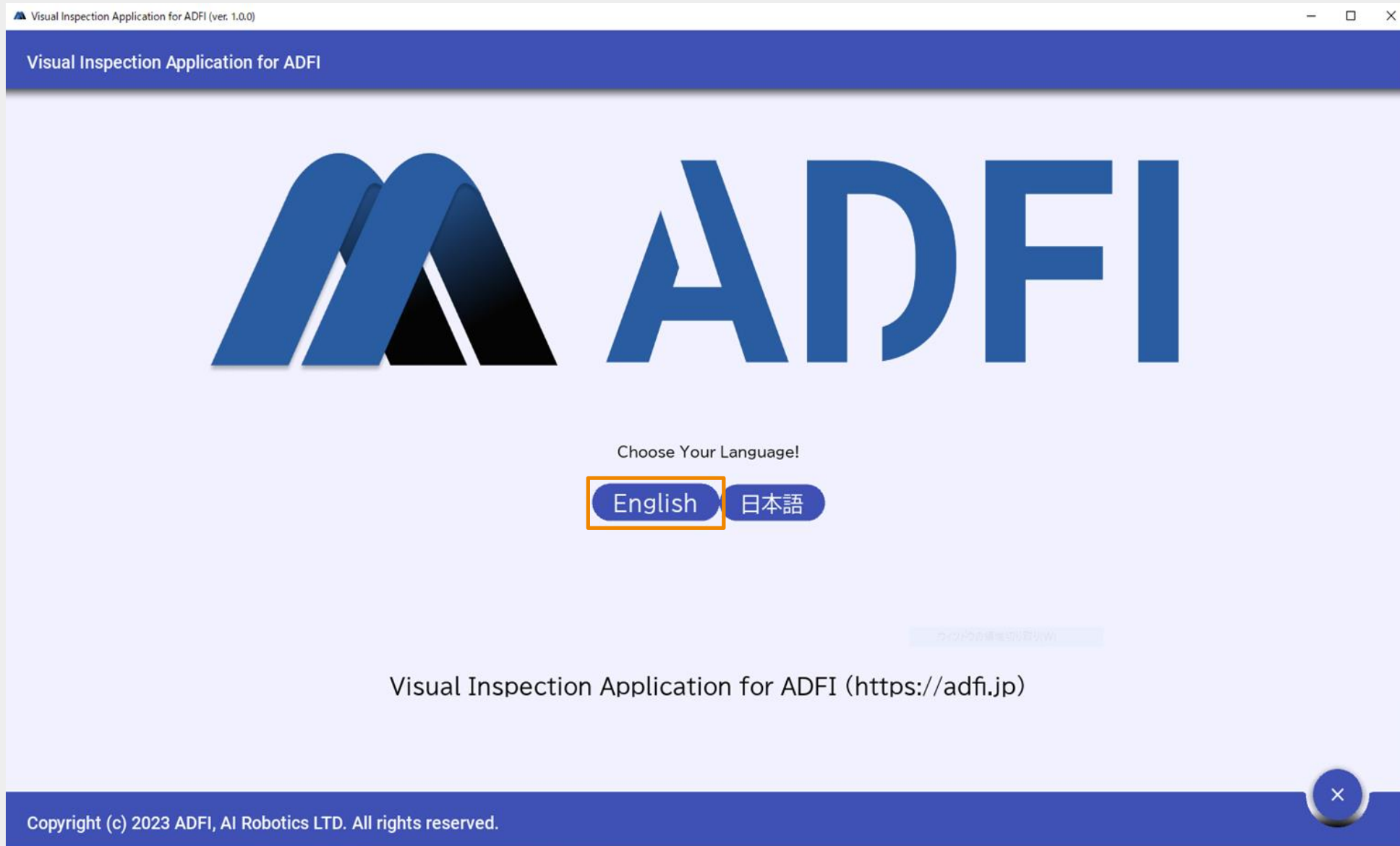


# Operation flow



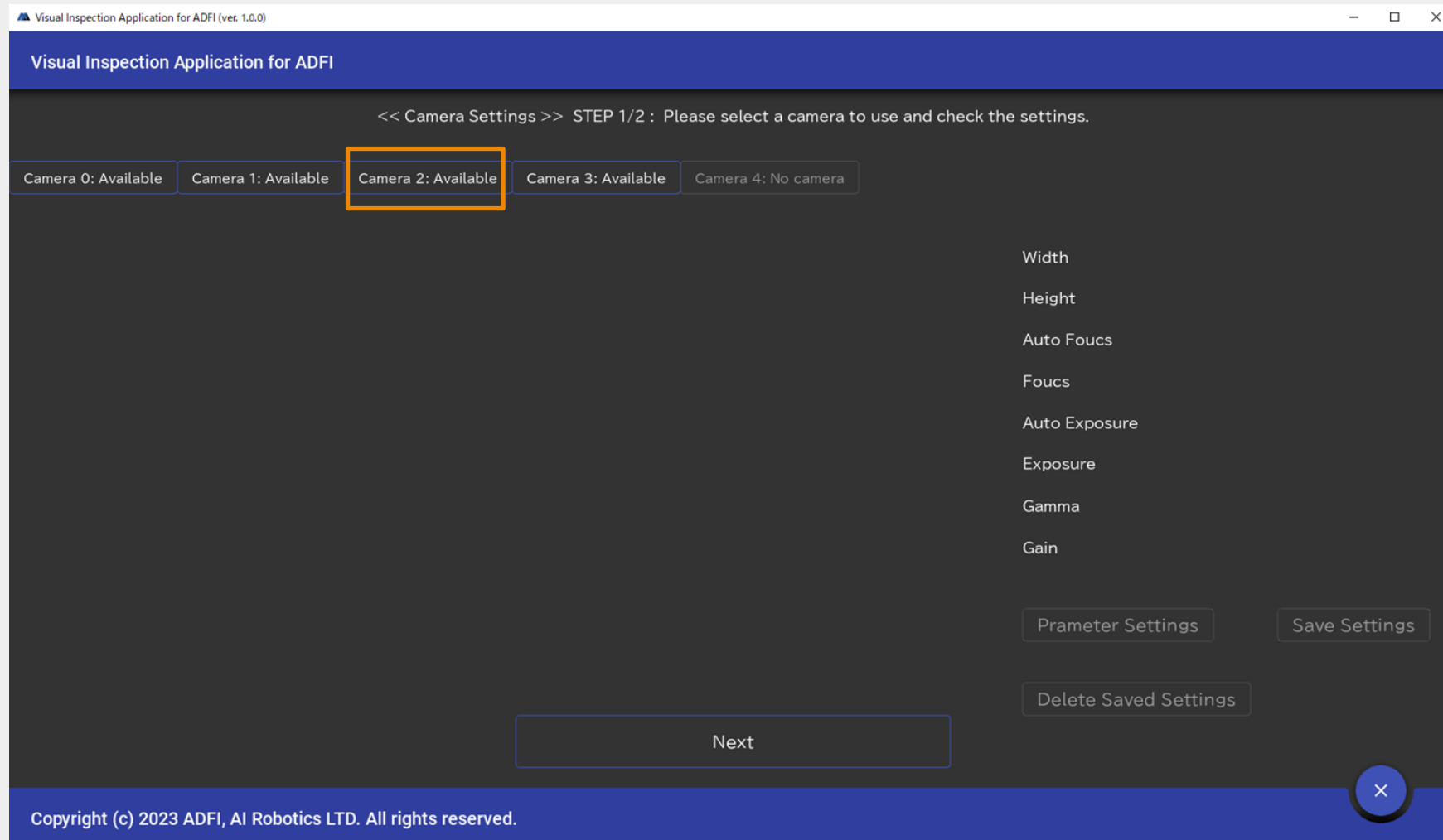
1. Choose your language
2. Camera settings
3. Preprocessing settings
4. Inspection settings
5. Dataset Creation
6. AI Model Settings
7. Inspection

# 1. Choose your language



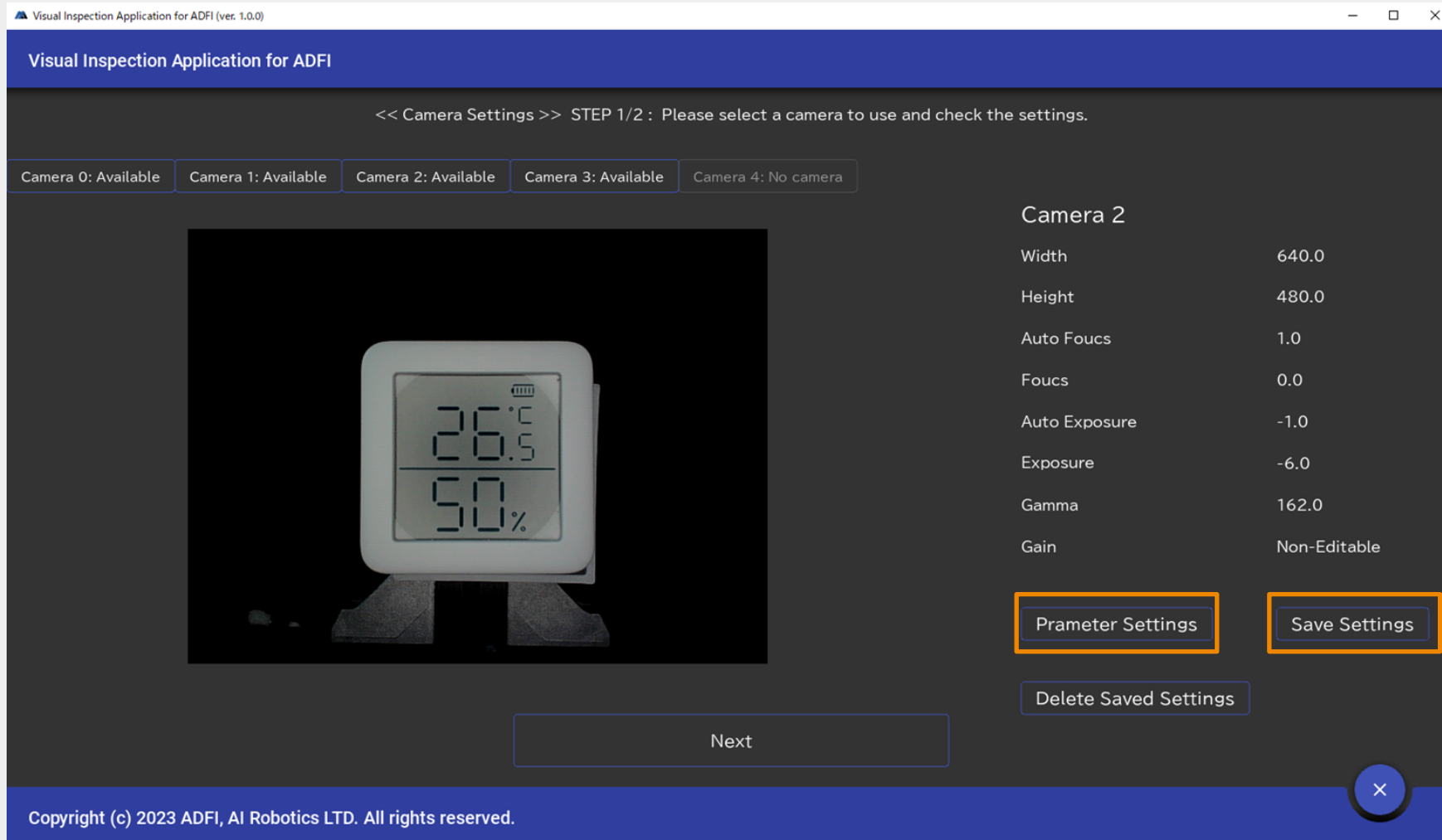
## 2. Camera settings

- Cameras connected to the PC are displayed.
- Please select the camera you want to use.



## 2. Camera settings

- If you want to change the parameters of the camera, you can change them by clicking "Parameter Settings" and "Save Settings".



Visual Inspection Application for ADFI (ver. 1.0.0)

Visual Inspection Application for ADFI

<< Camera Settings >> STEP 1/2 : Please select a camera to use and check the settings.

Camera 0: Available   Camera 1: Available   Camera 2: Available   Camera 3: Available   Camera 4: No camera

Camera 2

Width	640.0
Height	480.0
Auto Focus	1.0
Focus	0.0
Auto Exposure	-1.0
Exposure	-6.0
Gamma	162.0
Gain	Non-Editable

Parameter Settings   Save Settings

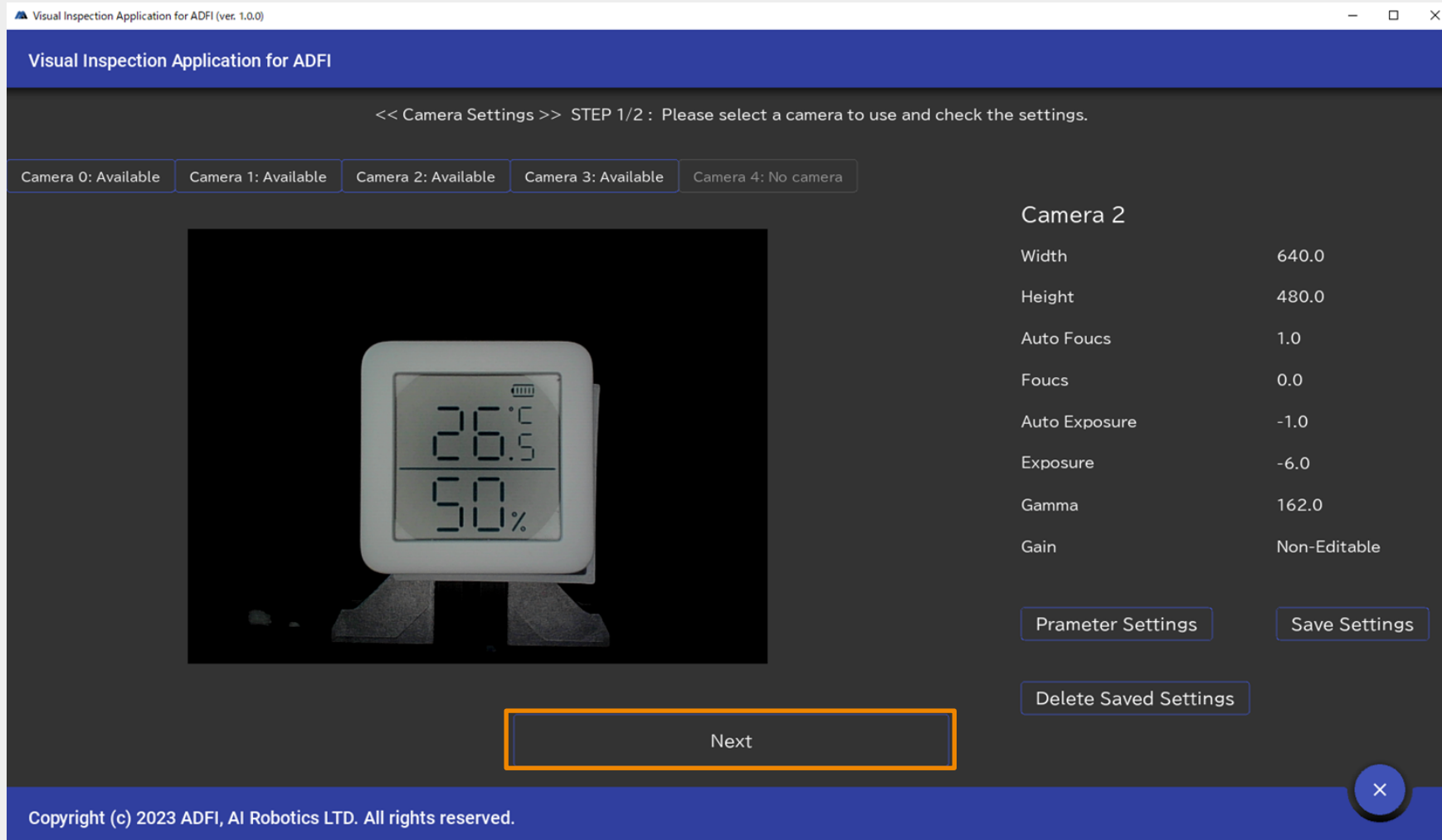
Delete Saved Settings

Next

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## 2. Camera settings

- After saving the camera parameters, please click “Next”.



Visual Inspection Application for ADFI (ver. 1.0.0)

Visual Inspection Application for ADFI

<< Camera Settings >> STEP 1/2 : Please select a camera to use and check the settings.

Camera 0: Available   Camera 1: Available   Camera 2: Available   Camera 3: Available   Camera 4: No camera

Camera 2

Width	640.0
Height	480.0
Auto Focus	1.0
Focus	0.0
Auto Exposure	-1.0
Exposure	-6.0
Gamma	162.0
Gain	Non-Editable

Parameter Settings   Save Settings

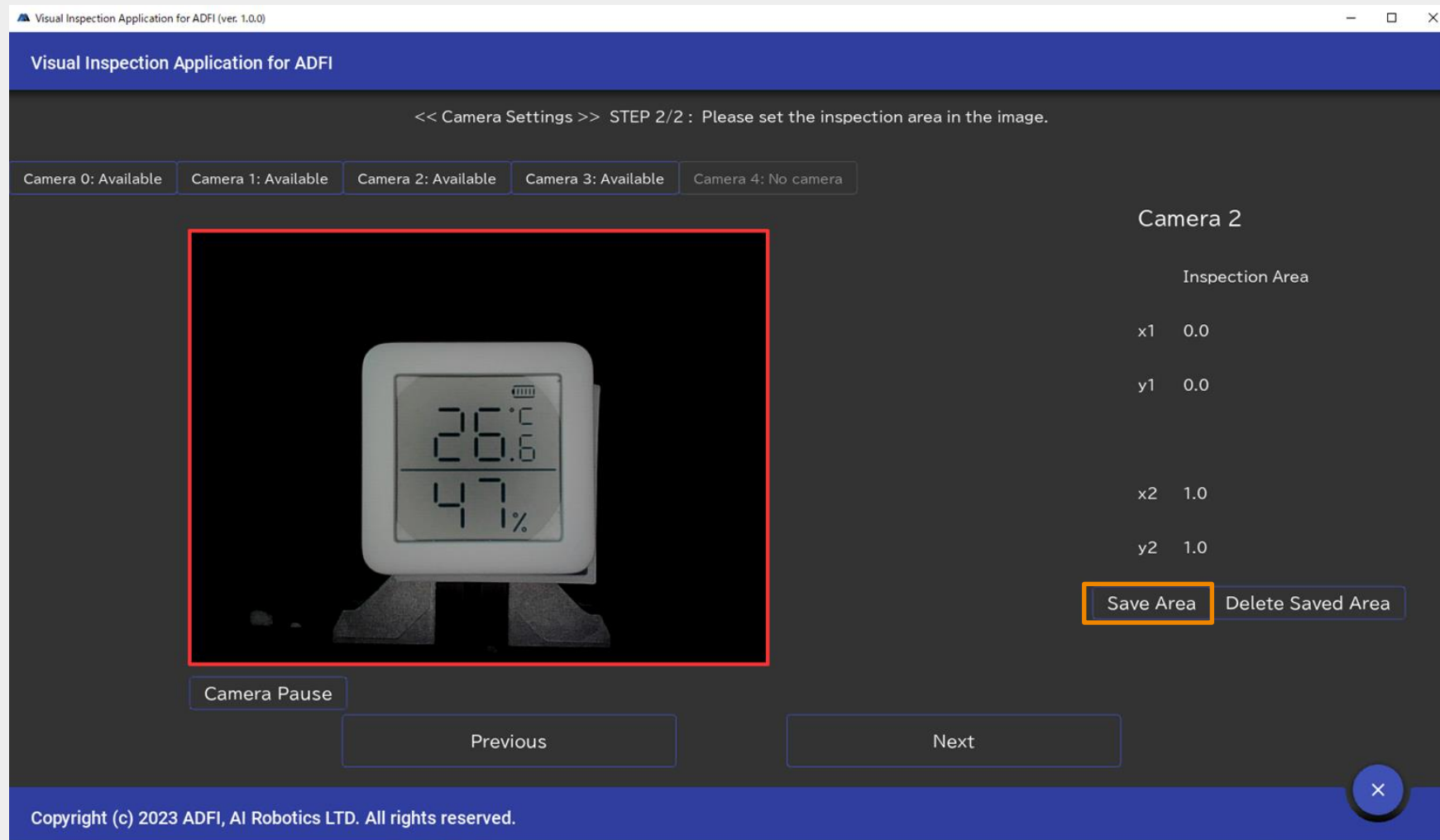
Delete Saved Settings

Next

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## 2. Camera settings

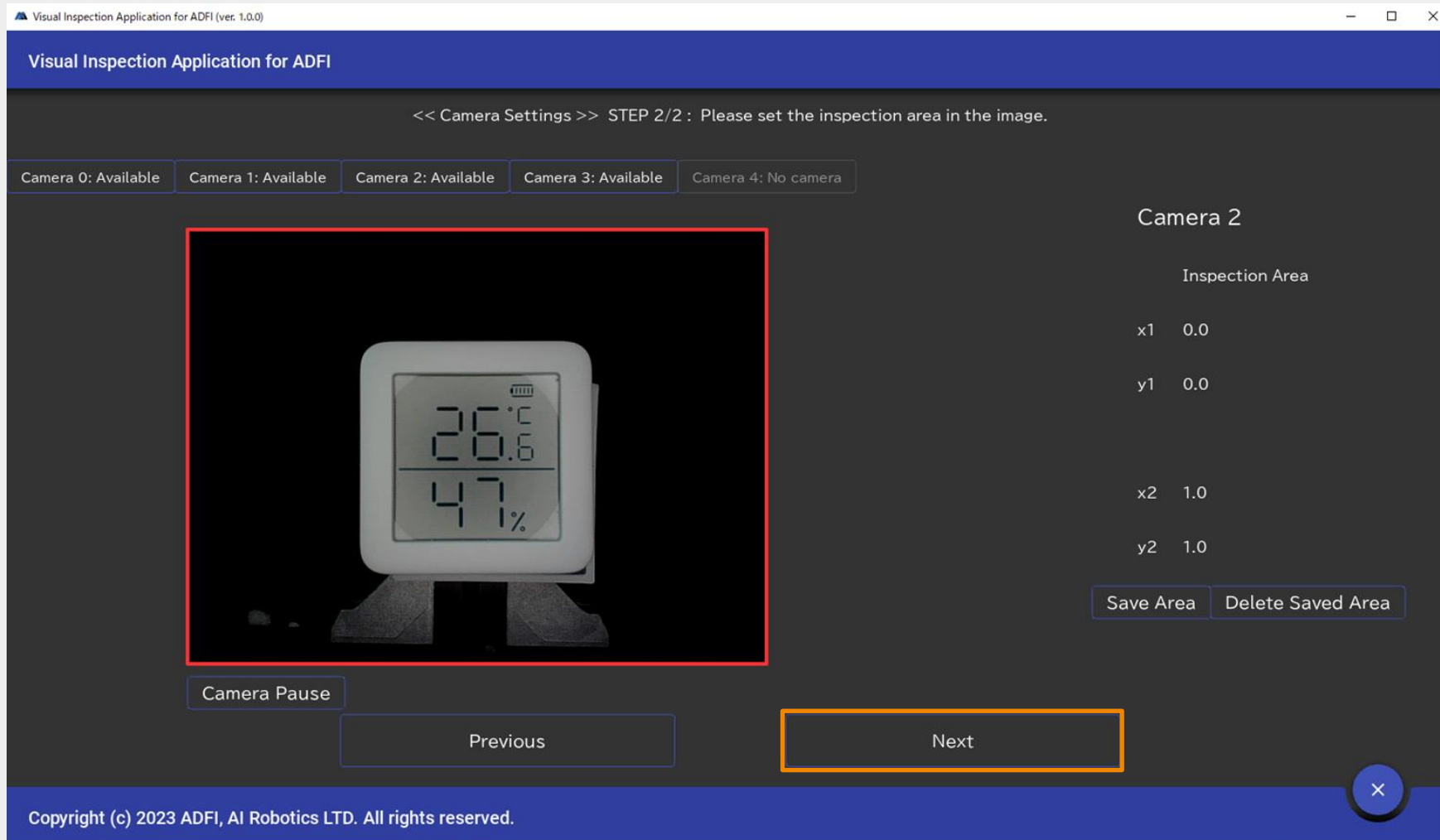
- You can specify the area to inspect.
- After specifying the area by dragging, please click “Save Area”.





## 2. Camera settings

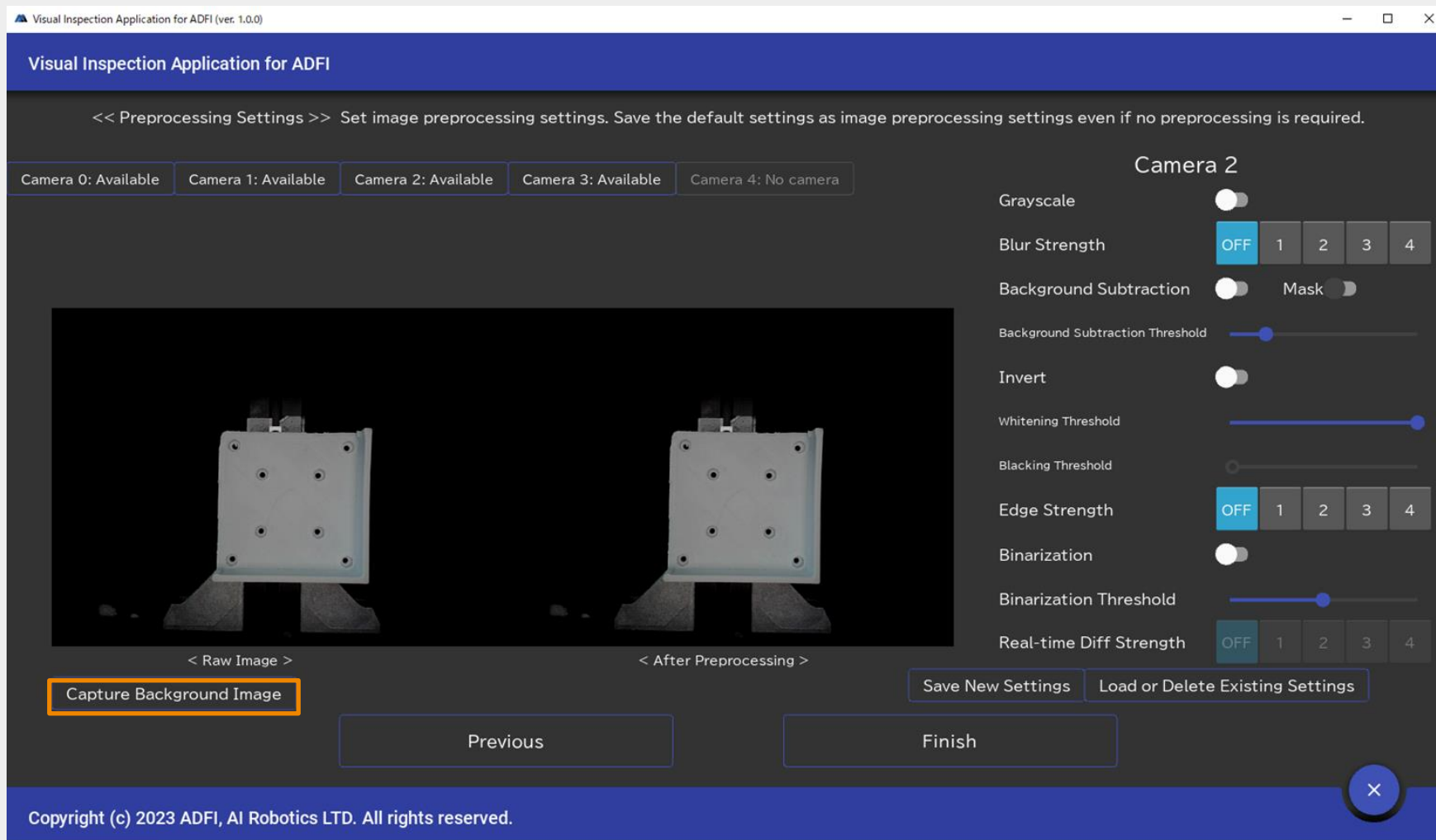
- Please click “Next”.



The screenshot shows the 'Visual Inspection Application for ADFI' interface. The title bar indicates the version is 1.0.0. The main window has a dark background with a blue header. The current step is 'STEP 2/2 : Please set the inspection area in the image.' Below this, there are five camera status buttons: 'Camera 0: Available', 'Camera 1: Available', 'Camera 2: Available', 'Camera 3: Available', and 'Camera 4: No camera'. The 'Camera 2' section is active, showing a live video feed of a digital thermometer displaying 26.6°C and 47% humidity. A red rectangular box is drawn around the thermometer in the video feed. To the right of the video feed, the 'Camera 2' settings are shown, including the 'Inspection Area' coordinates: x1: 0.0, y1: 0.0, x2: 1.0, and y2: 1.0. Below these coordinates are two buttons: 'Save Area' and 'Delete Saved Area'. At the bottom of the interface, there are three buttons: 'Camera Pause', 'Previous', and 'Next'. The 'Next' button is highlighted with an orange border. A blue circular button with a white 'x' is located in the bottom right corner. The footer contains the text: 'Copyright (c) 2023 ADFI, AI Robotics LTD. All rights reserved.'

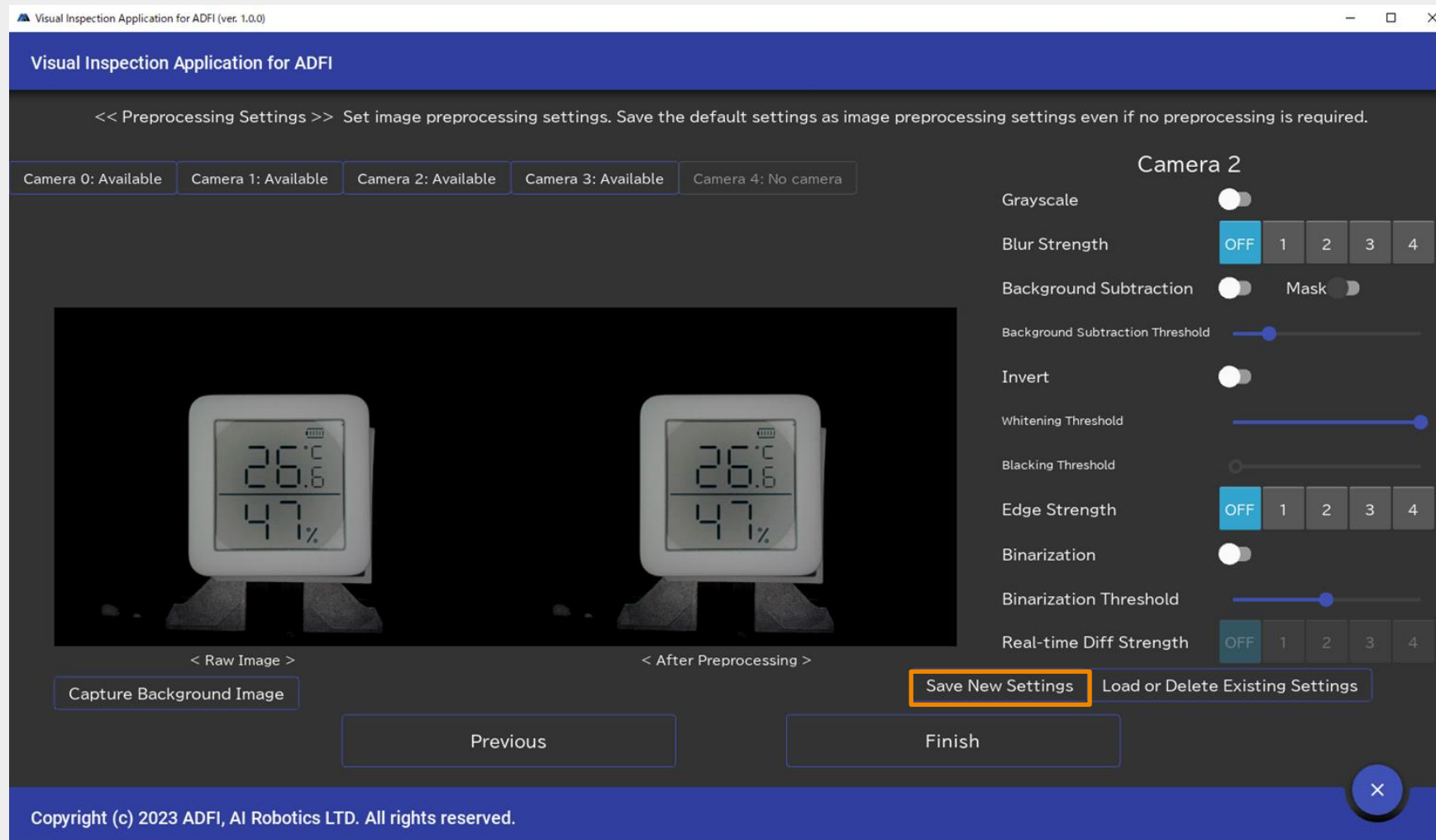
# 3. Preprocessing settings

- Please click “Capture Background Image” with the object to be inspected removed (background only).



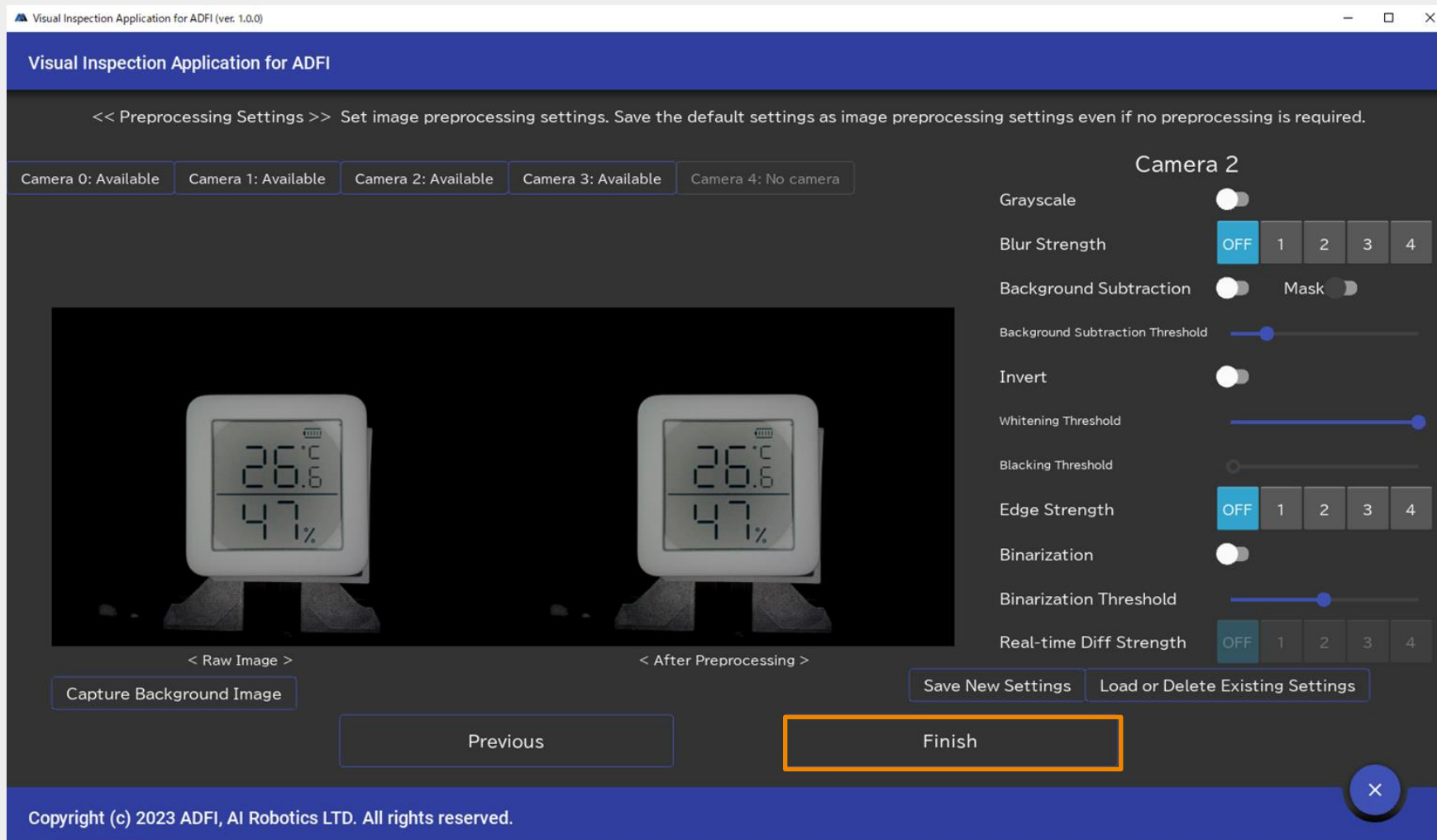
# 3. Preprocessing settings

- Image preprocessing can be set.
- Even if no preprocessing is required, please click "Save new settings".



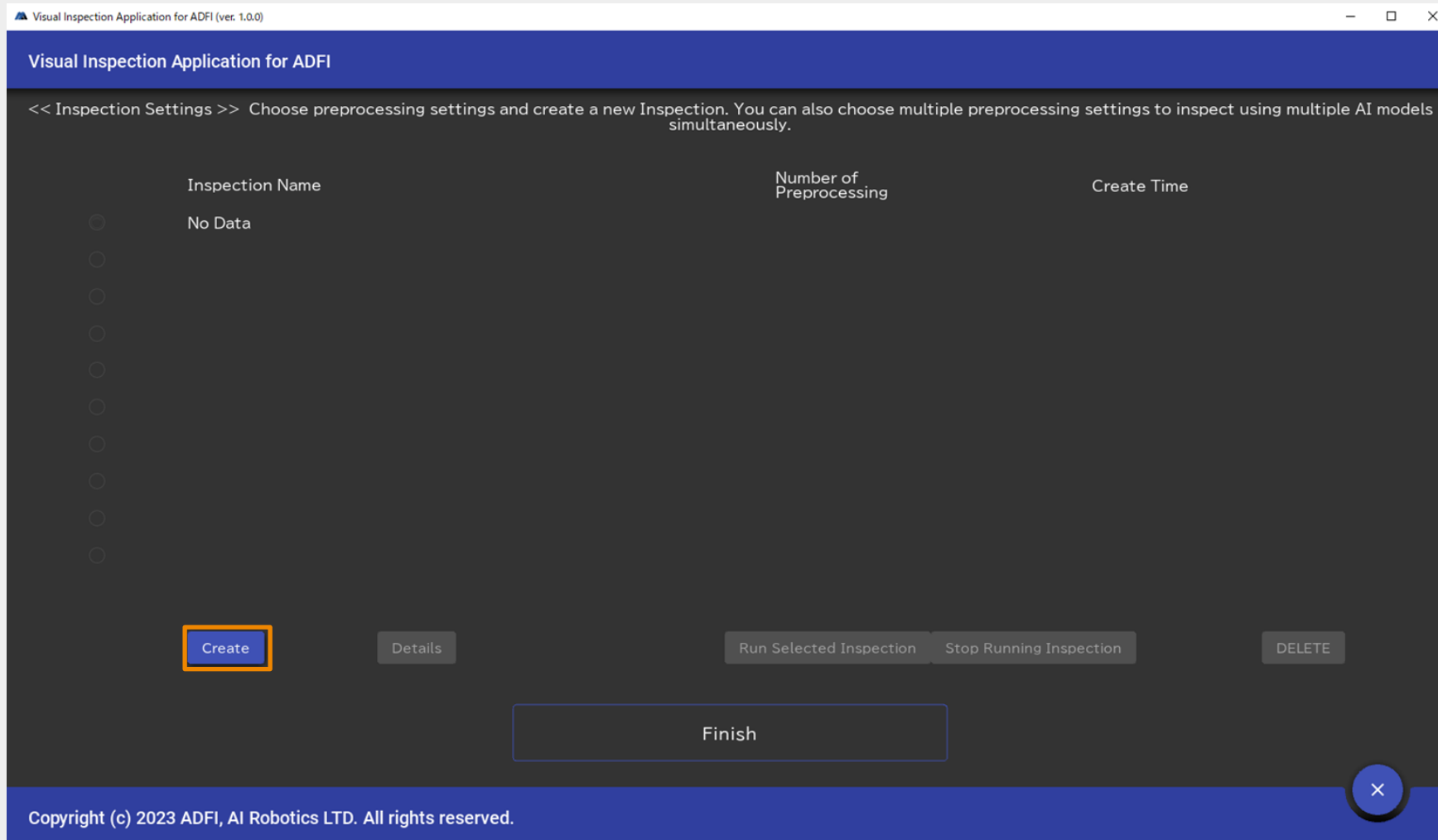
# 3. Preprocessing settings

- After saving the preprocessing settings, please click “Finish”.



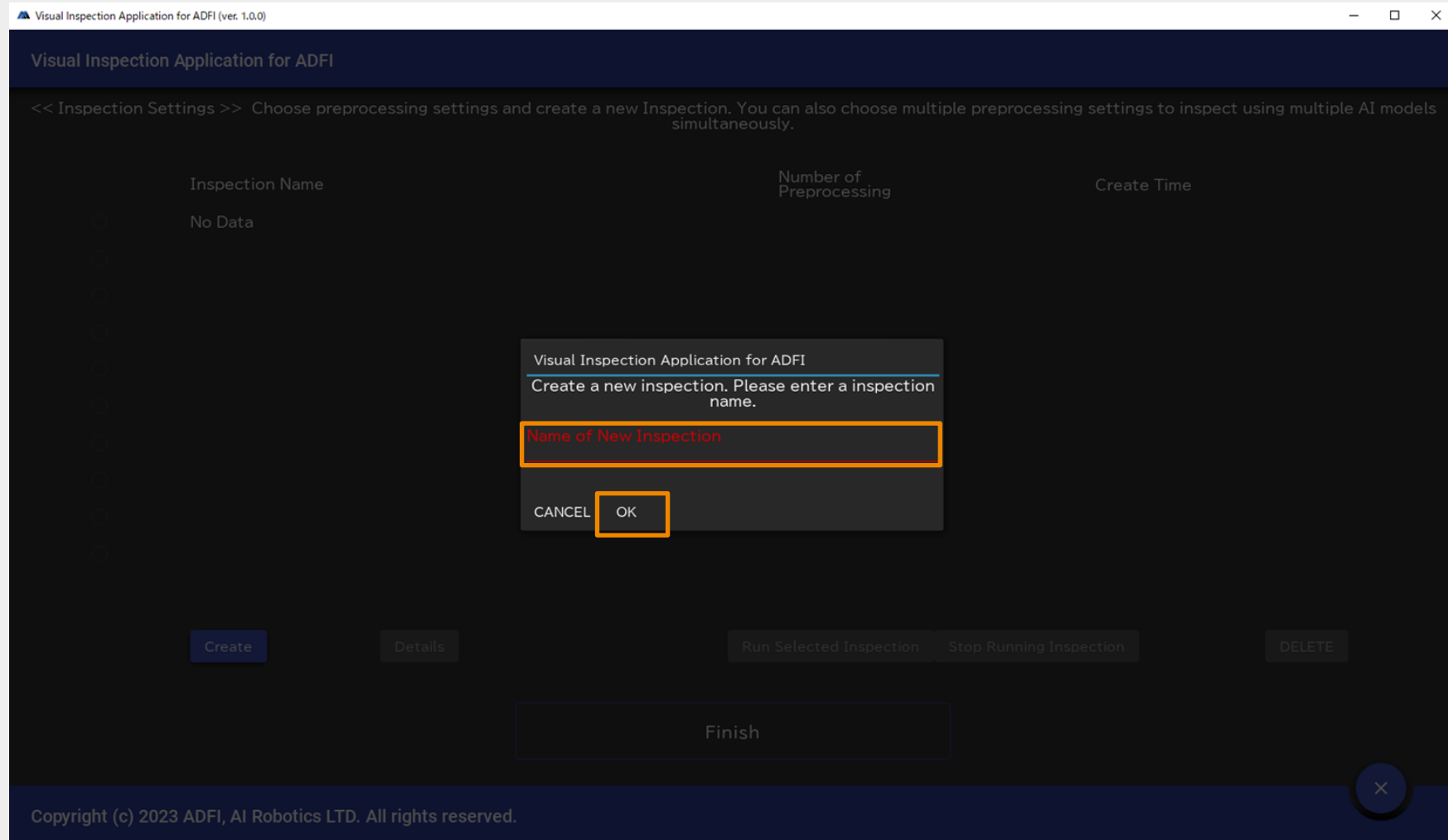
# 4. Inspection settings

- Please create a new inspection.



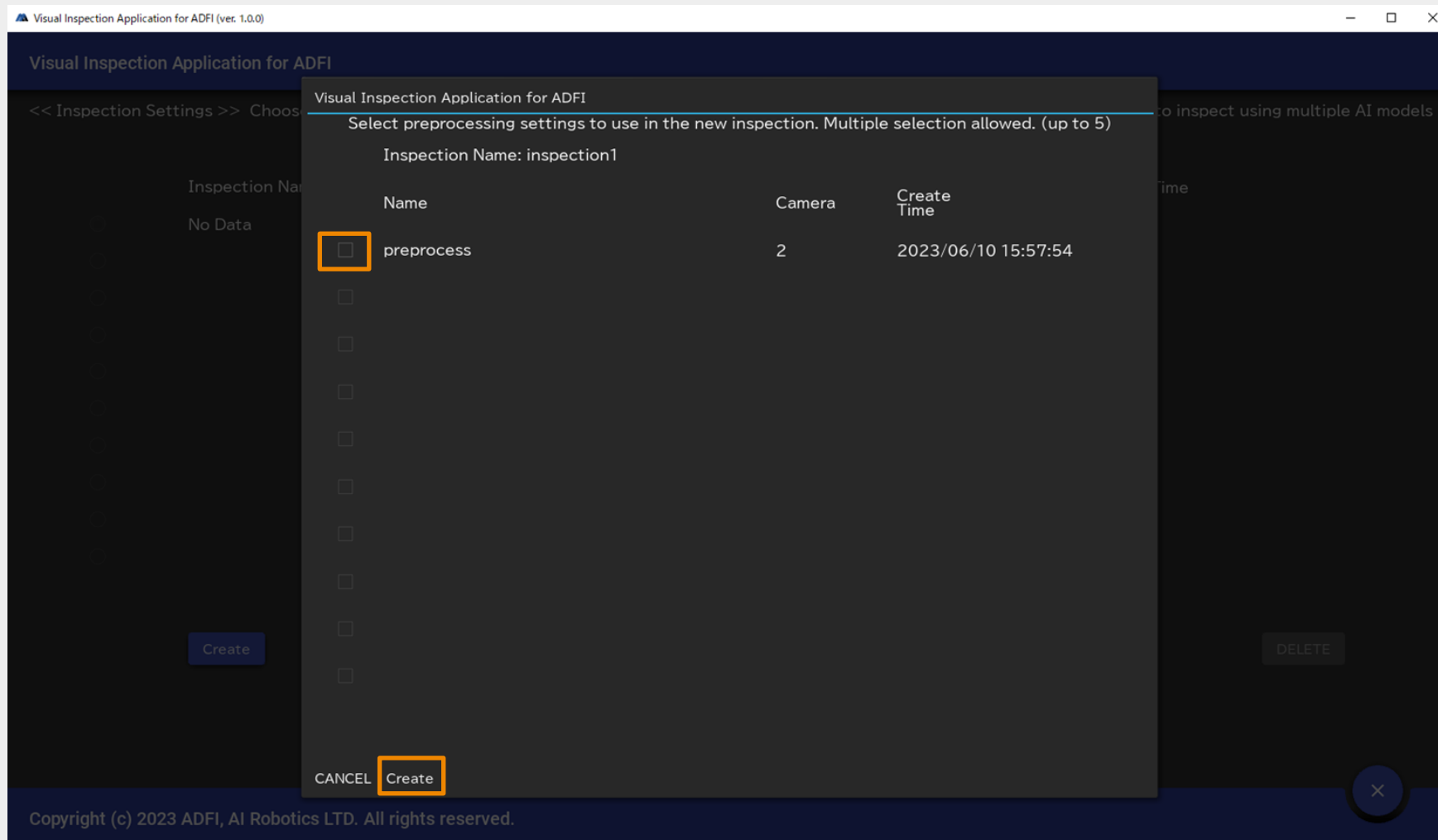
# 4. Inspection settings

- Please enter a new inspection name.



# 4. Inspection settings

- Please select the preprocessing you created earlier and click “Create”.



# 4. Inspection settings



- Please make sure the inspection you created is “Running” and click “Finish”.

The screenshot shows the 'Visual Inspection Application for ADFI' interface. At the top, there is a blue header with the application name. Below it, a subtitle reads: '<< Inspection Settings >> Choose preprocessing settings and create a new Inspection. You can also choose multiple preprocessing settings to inspect using multiple AI models simultaneously.' The main area contains a table with the following data:

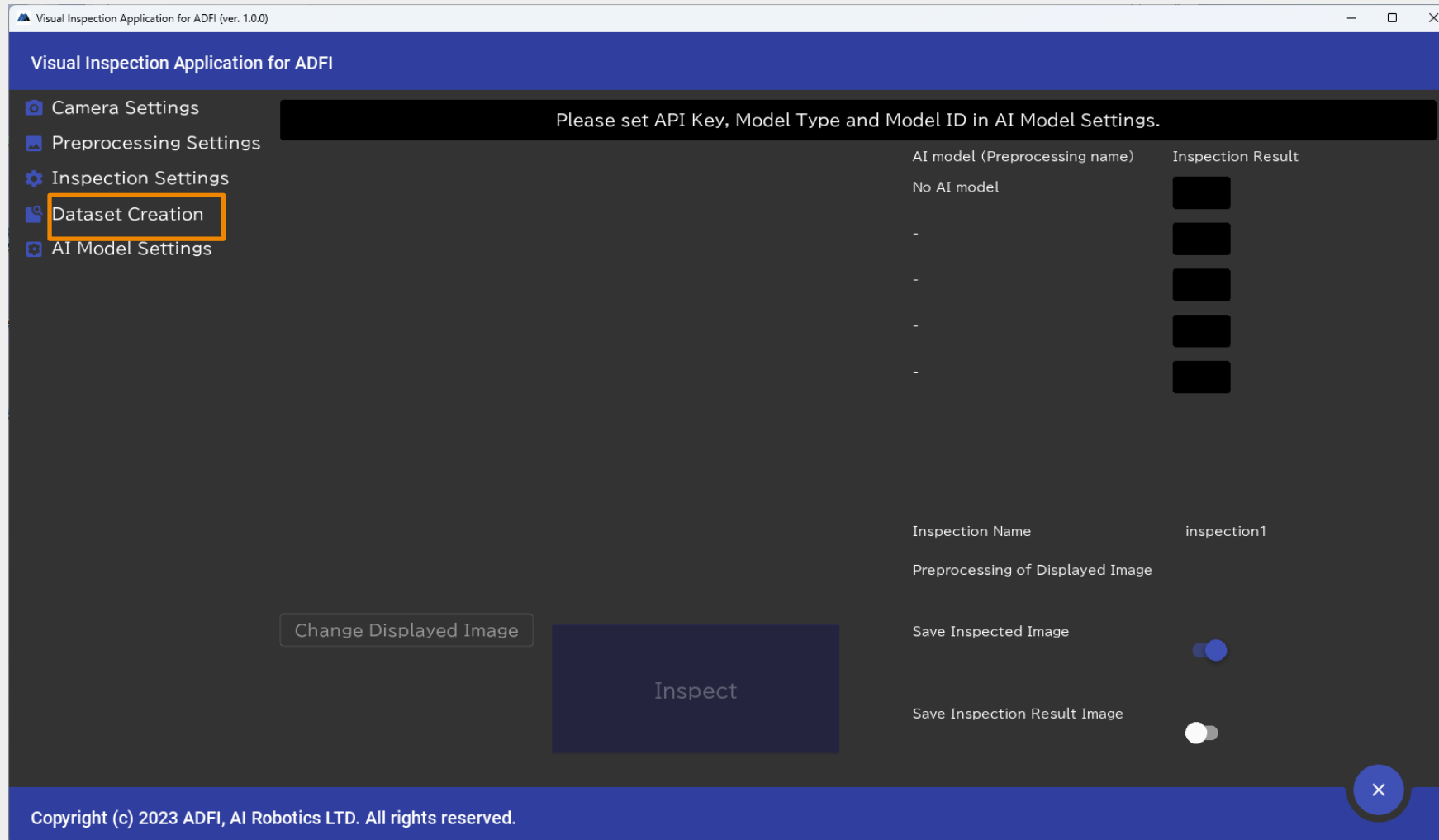
	Inspection Name	Number of Preprocessing	Create Time
<input checked="" type="radio"/>	<< Running >> inspection1	1	2023/06/10 16:01:39
<input type="radio"/>			
<input type="radio"/>			
<input type="radio"/>			
<input type="radio"/>			
<input type="radio"/>			
<input type="radio"/>			
<input type="radio"/>			
<input type="radio"/>			
<input type="radio"/>			

At the bottom of the interface, there are several buttons: 'Create', 'Details', 'Run Selected Inspection', 'Stop Running Inspection', and 'DELETE'. A 'Finish' button is highlighted with an orange box. A copyright notice at the bottom left reads: 'Copyright (c) 2023 ADFI, AI Robotics LTD. All rights reserved.' A close button (X) is located in the bottom right corner.



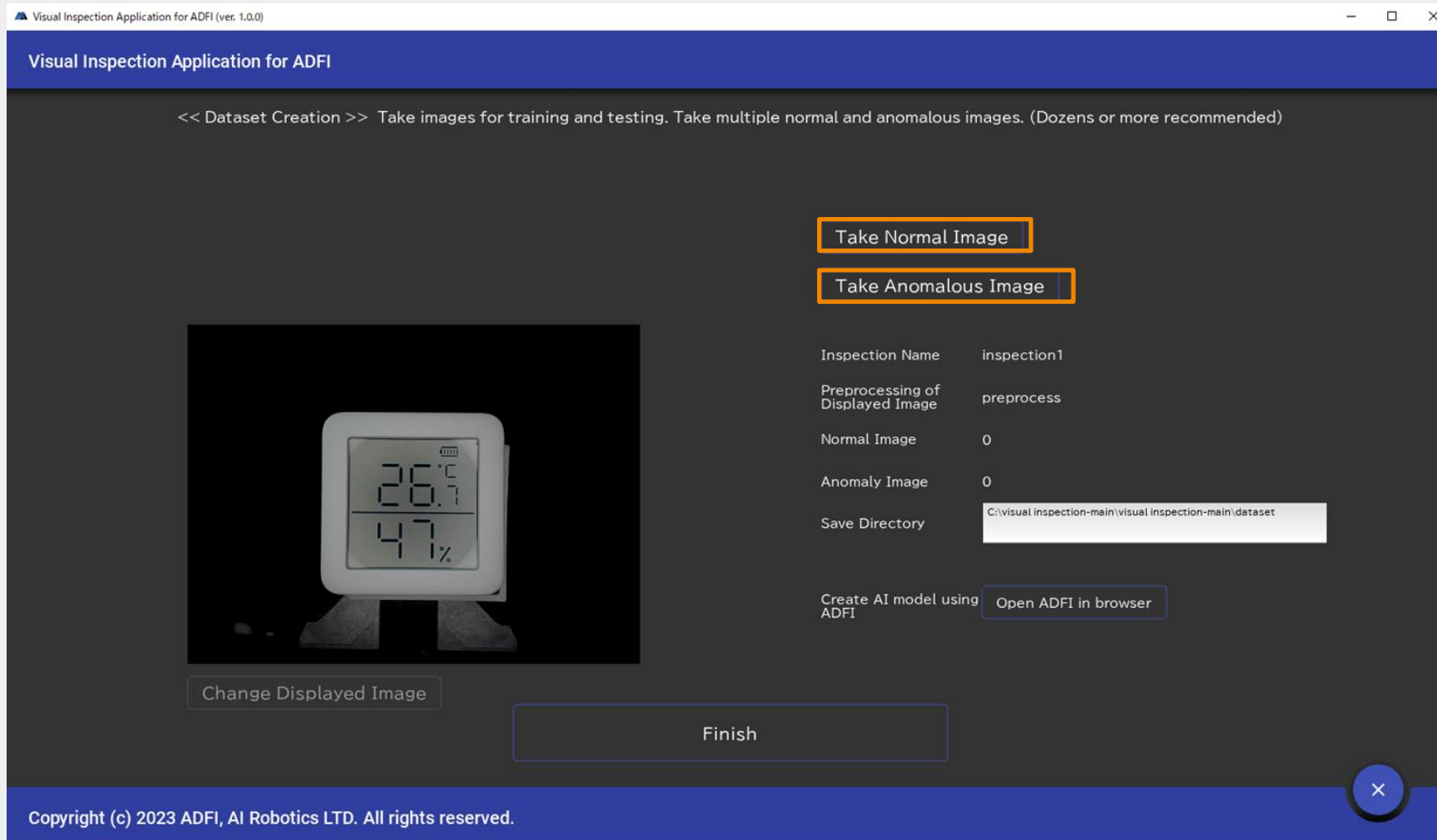
# 5. Dataset Creation

- Please click “Dataset Creation” on the left menu.



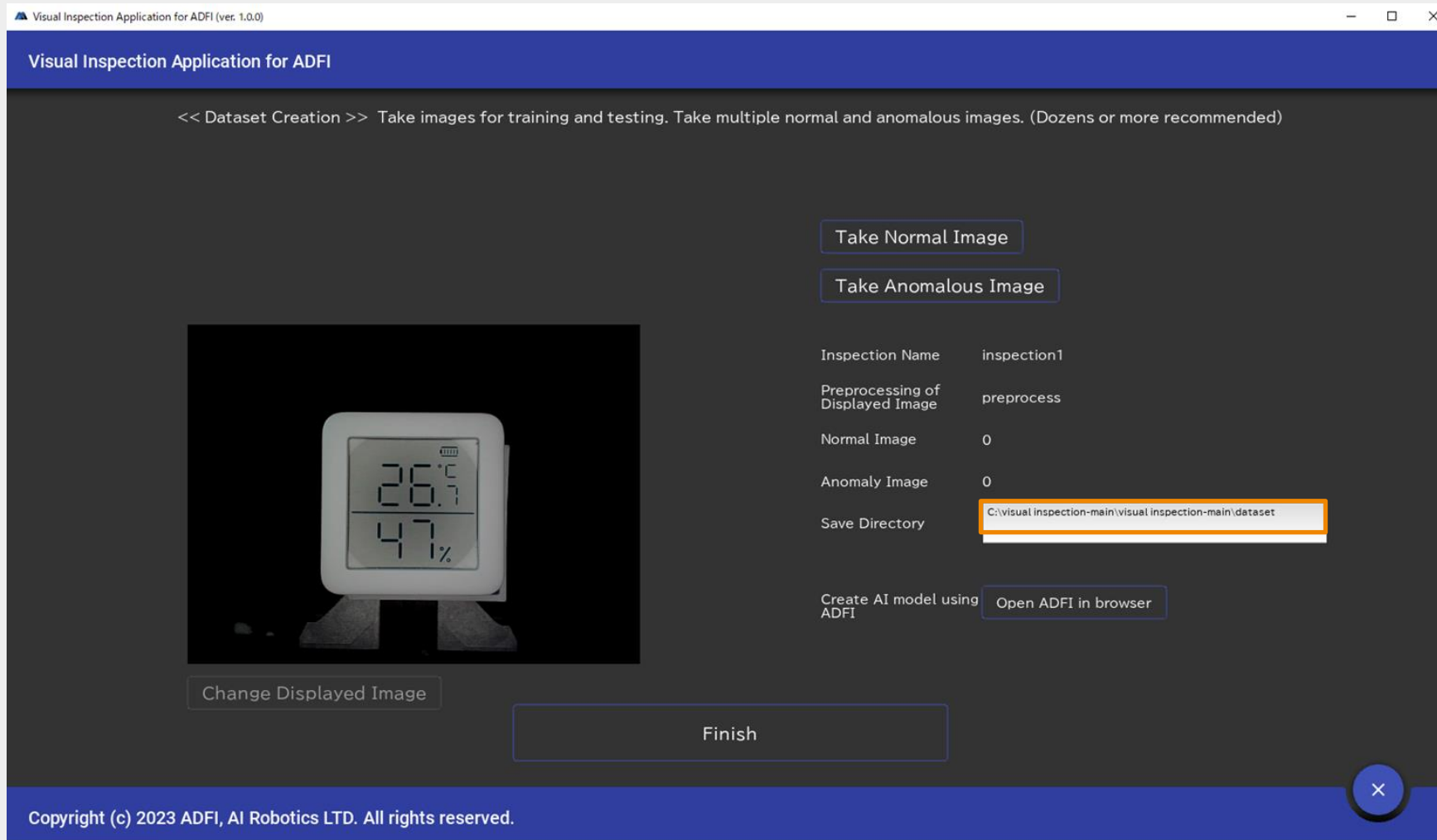
# 5. Dataset Creation

- Please take images for creating (training and testing) the AI model.
- Please replace the object with other one after each image is taken.



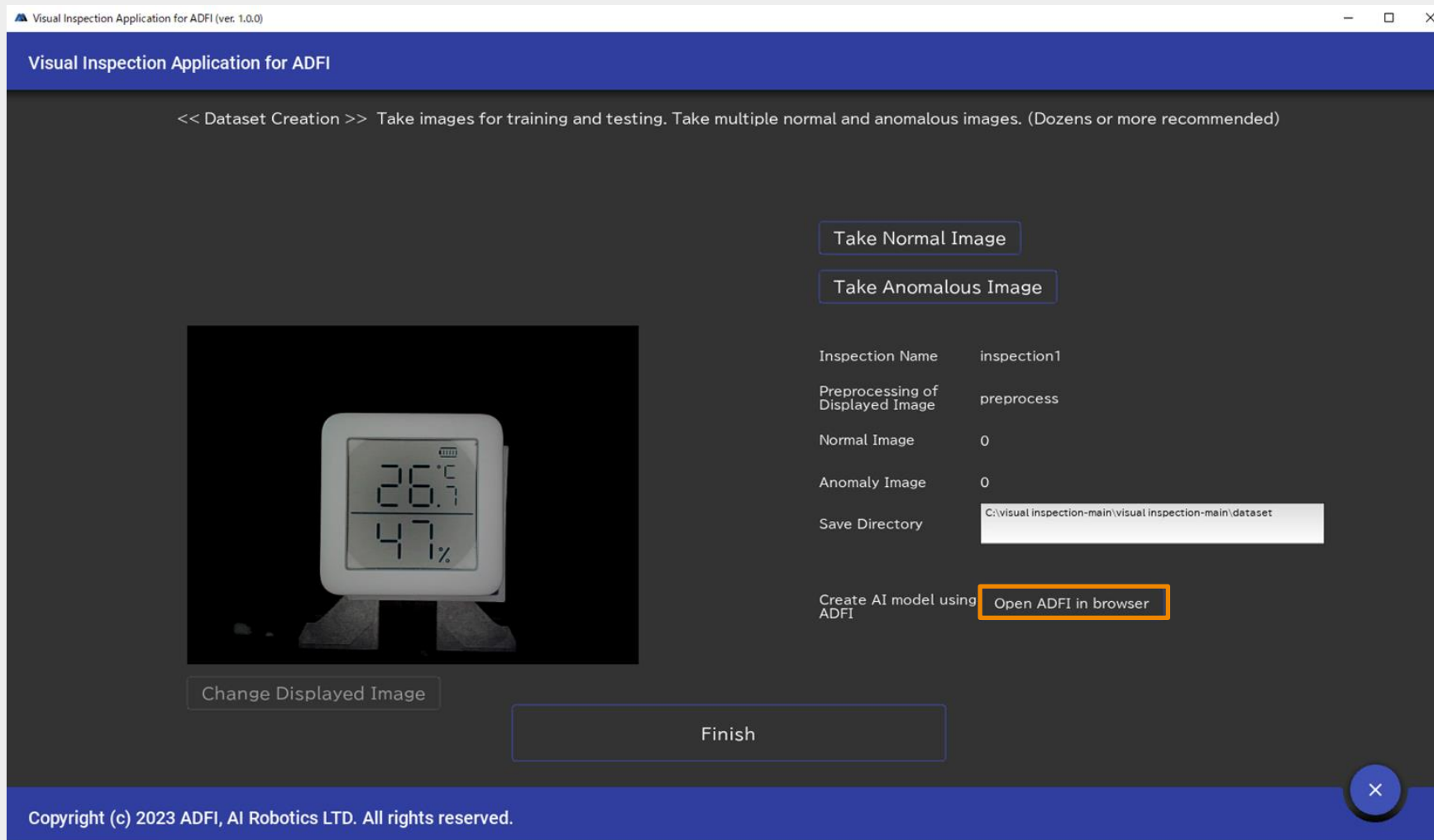
# 5. Dataset Creation

- The captured images exist in the “Save Directory”.



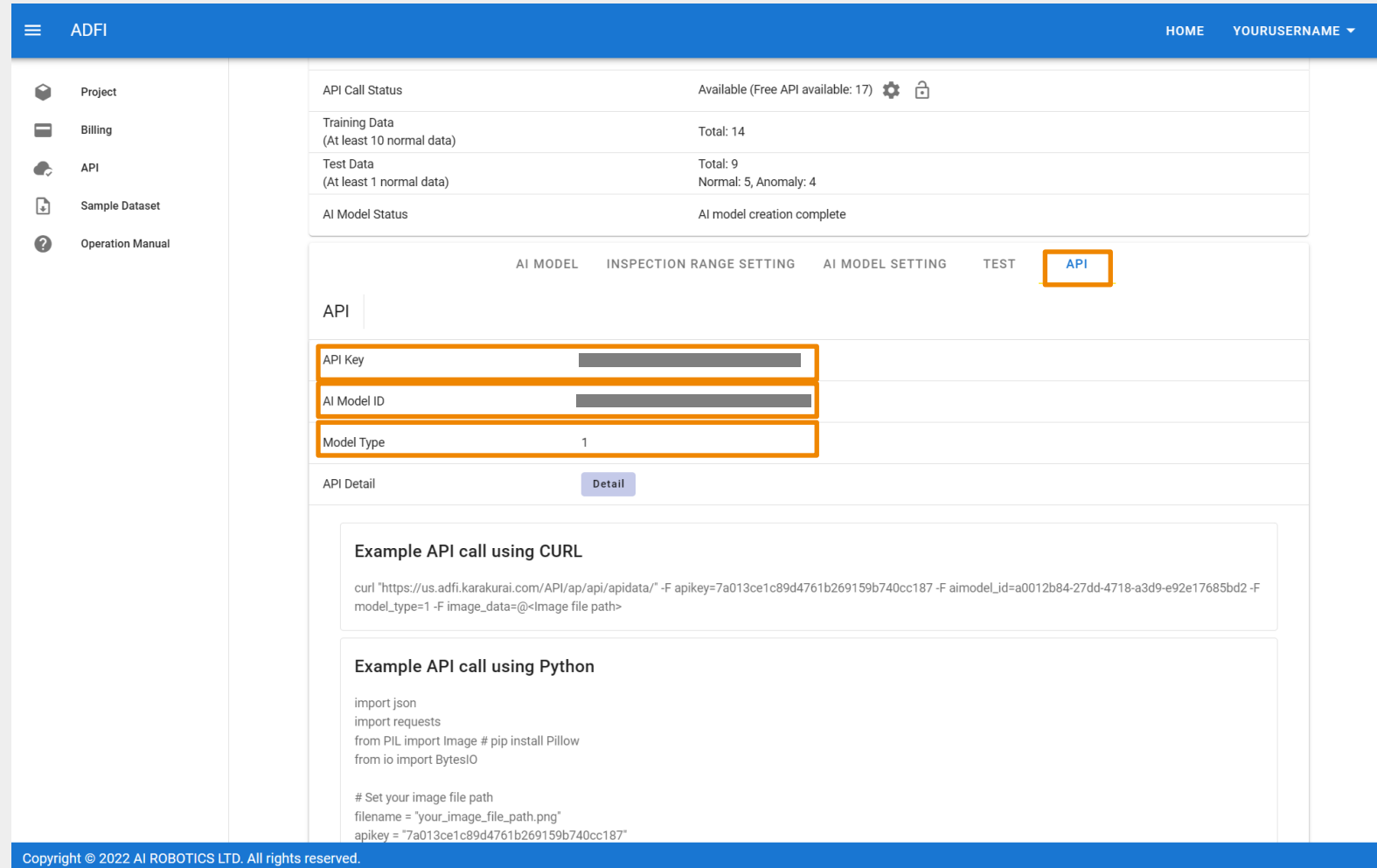
# 5. Dataset Creation

- After taking enough images, please open ADFI and create an AI model.
- Please refer to the tutorial( <https://adfi.jp/manual/> ) for how to create an AI model in ADFI.



# 5. Dataset Creation

- After creating an AI model in ADFI, please copy the values of API information (API Key, AI Model ID and Model Type) in the API tab of ADFI.



The screenshot shows the ADFI web interface. The top navigation bar includes a menu icon, the text 'ADFI', and links for 'HOME' and 'YOURUSERNAME'. A left sidebar contains navigation items: 'Project', 'Billing', 'API', 'Sample Dataset', and 'Operation Manual'. The main content area displays API call status and data statistics. Below this, a tabbed interface has 'API' selected and highlighted with an orange box. Under the 'API' tab, three fields are highlighted with orange boxes: 'API Key', 'AI Model ID', and 'Model Type'. Below these fields is a 'Detail' button and a section for API call examples. The 'Example API call using CURL' section shows a curl command with placeholder values. The 'Example API call using Python' section shows a Python script with placeholder values.

API Call Status	Available (Free API available: 17) ⚙️ 🔒
Training Data (At least 10 normal data)	Total: 14
Test Data (At least 1 normal data)	Total: 9 Normal: 5, Anomaly: 4
AI Model Status	AI model creation complete

AI MODEL   INSPECTION RANGE SETTING   AI MODEL SETTING   TEST   **API**

API

API Key	[REDACTED]
AI Model ID	[REDACTED]
Model Type	1

API Detail   [Detail](#)

**Example API call using CURL**

```
curl "https://us.adfi.karakurai.com/API/ap/api/apidata/" -F apikey=7a013ce1c89d4761b269159b740cc187 -F aimodel_id=a0012b84-27dd-4718-a3d9-e92e17685bd2 -F model_type=1 -F image_data=@<Image file path>
```

**Example API call using Python**

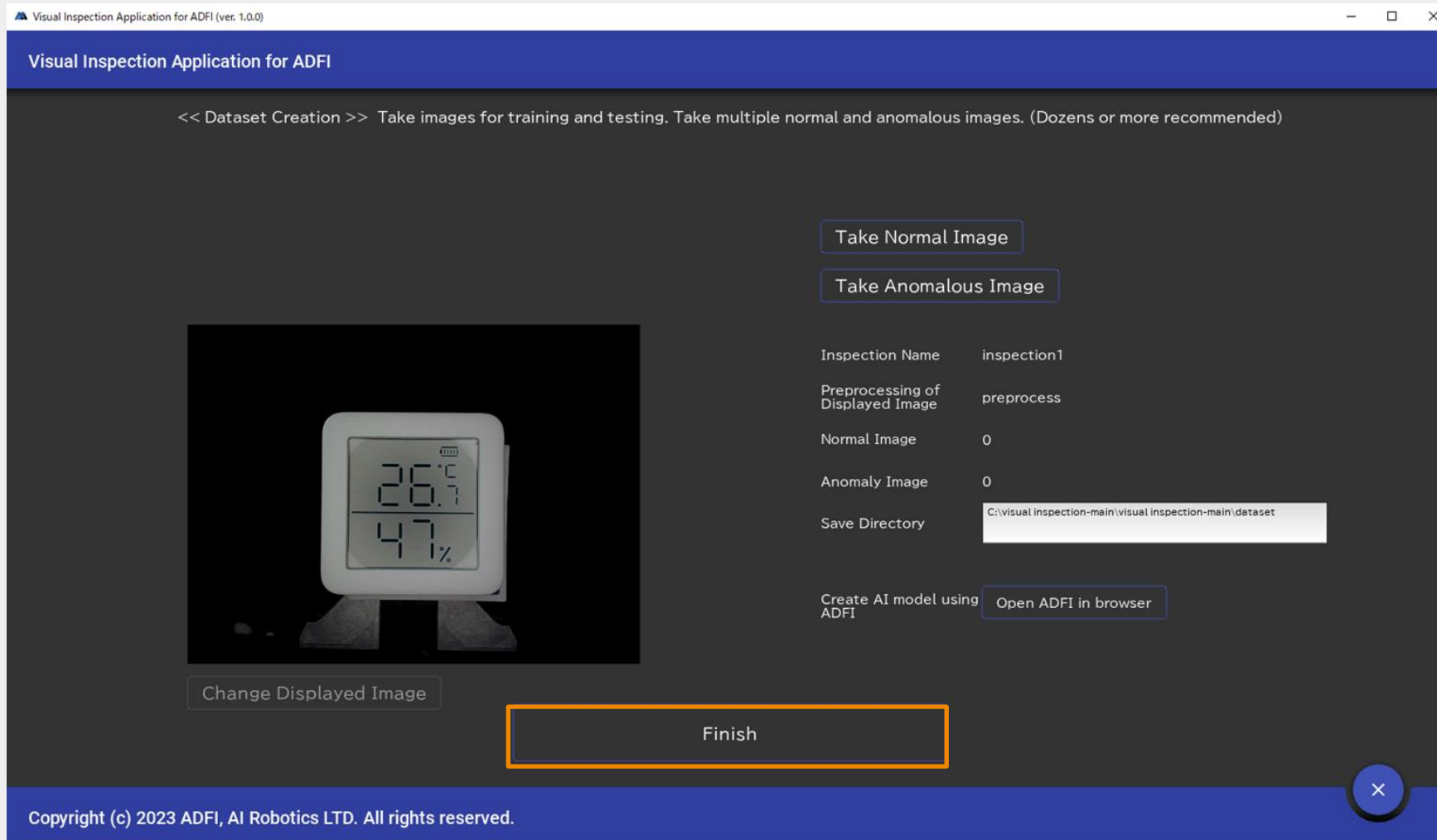
```
import json
import requests
from PIL import Image # pip install Pillow
from io import BytesIO

# Set your image file path
filename = "your_image_file_path.png"
apikey = "7a013ce1c89d4761b269159b740cc187"
```

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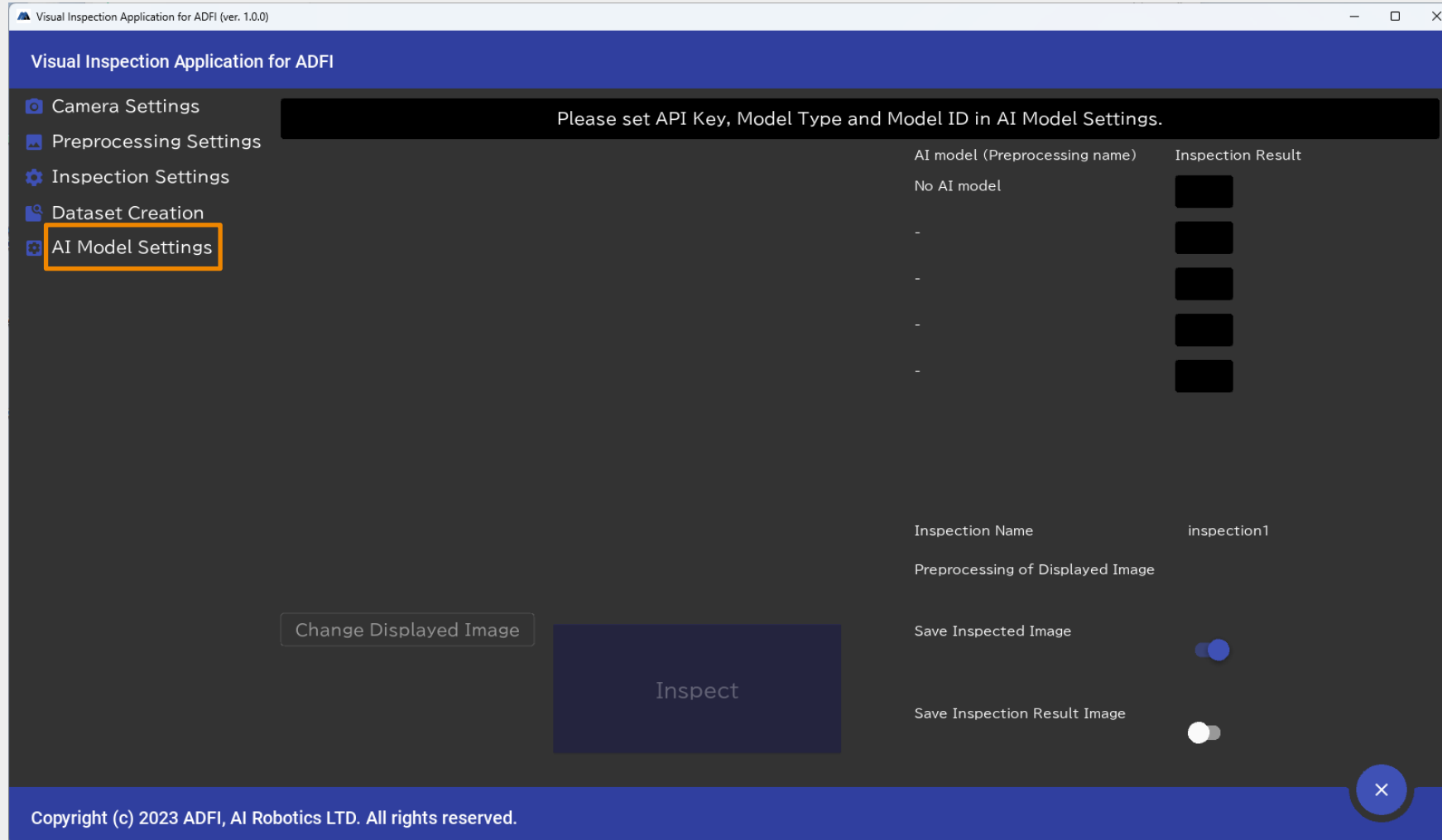
# 5. Dataset Creation

- Please click “Finish”.



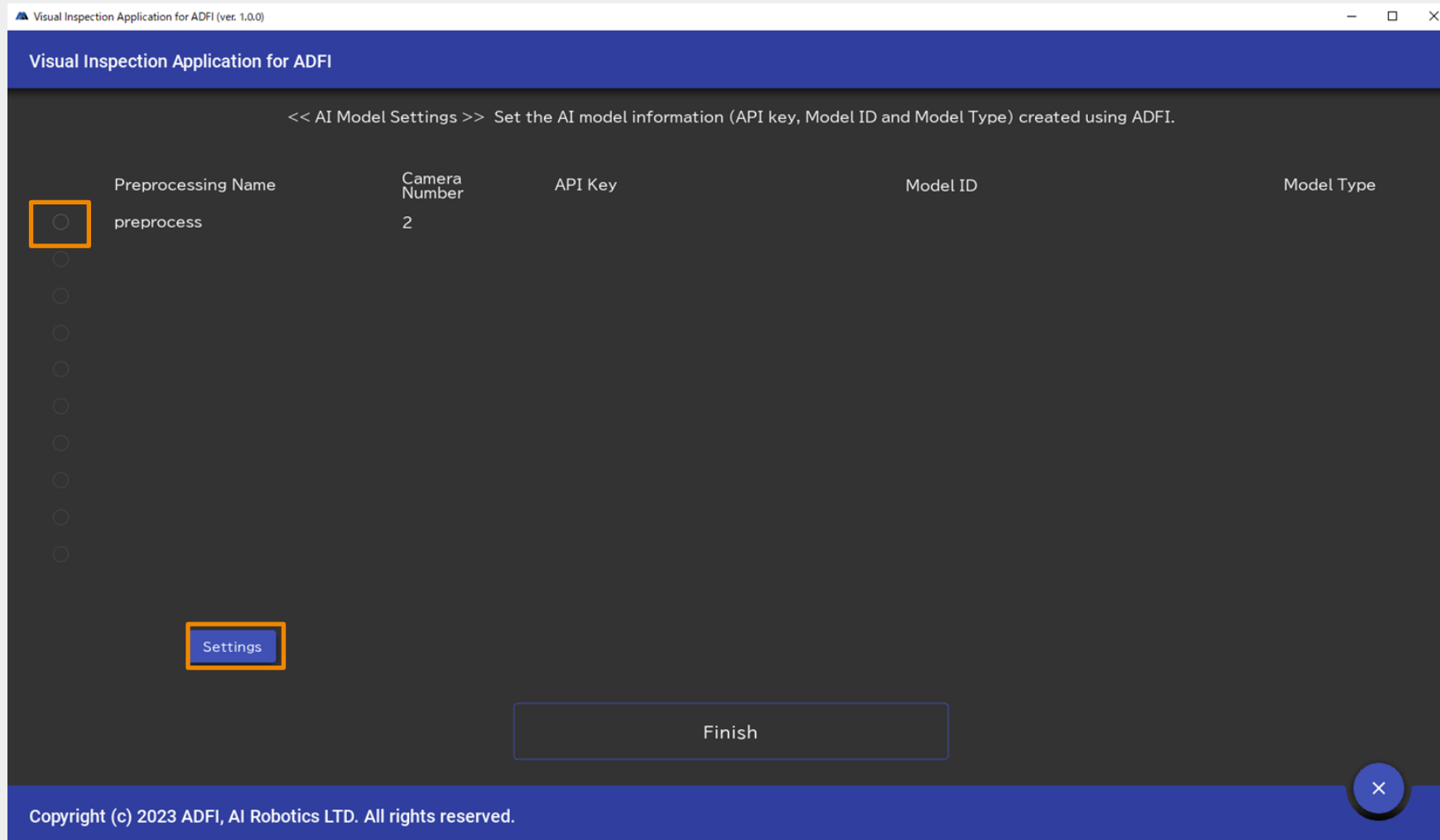
# 6. AI Model Settings

- Please click “ AI Model Settings“ on the left menu.



# 6. AI Model Settings

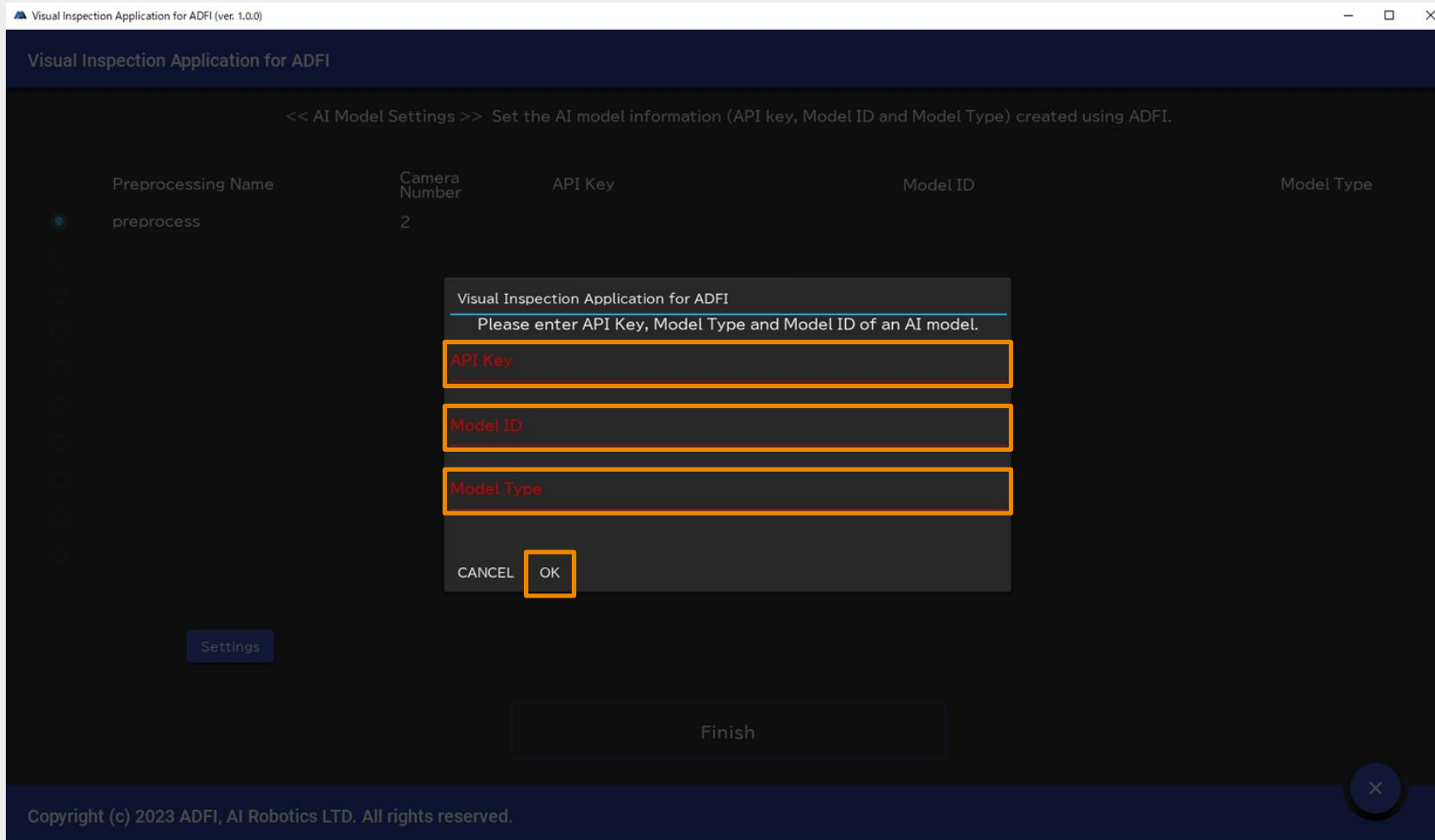
- Please select the preprocessing you created earlier and click “Settings”.





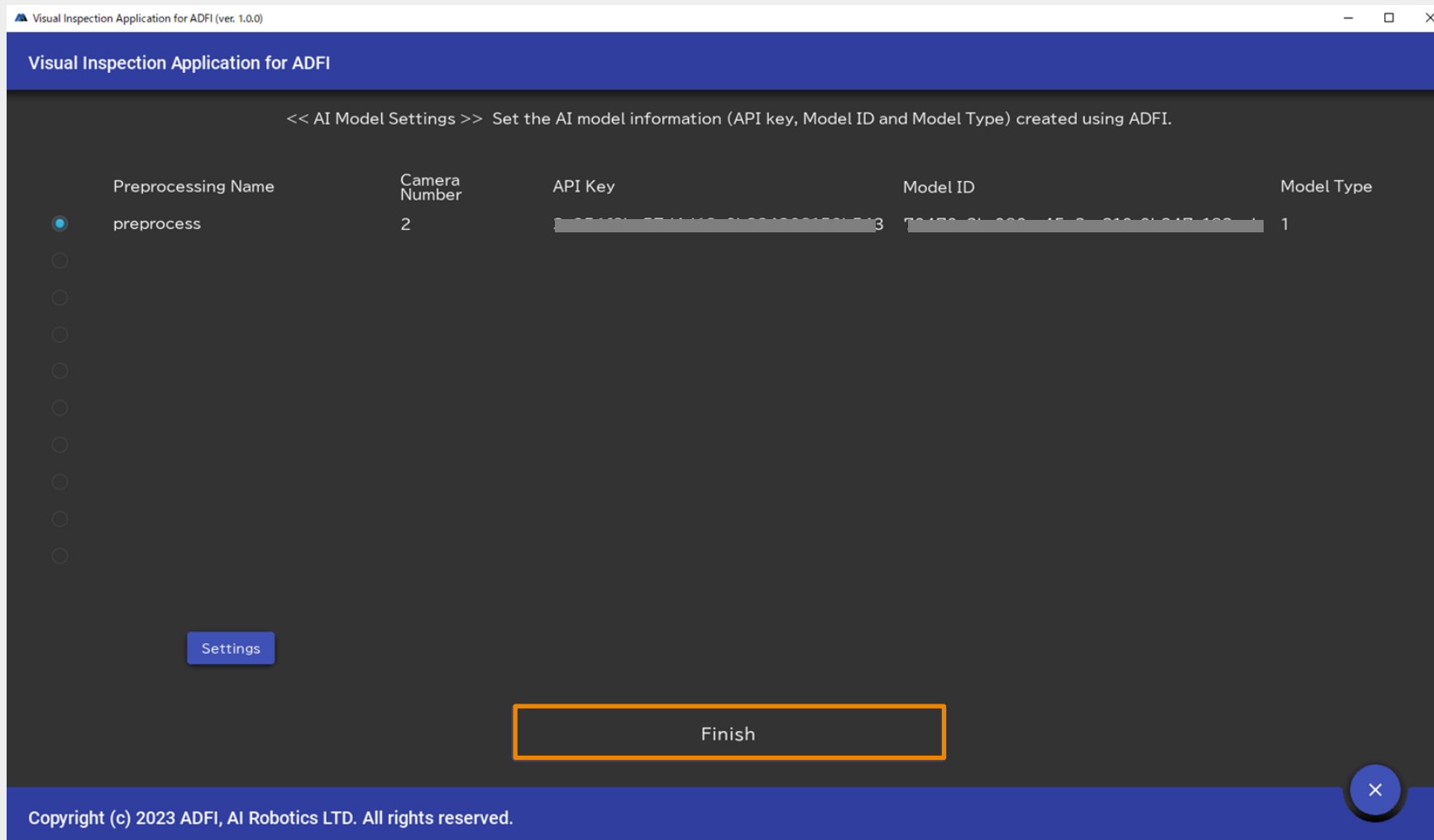
# 6. AI Model Settings

- Please enter the information of the AI model created with ADFI and click “OK”.



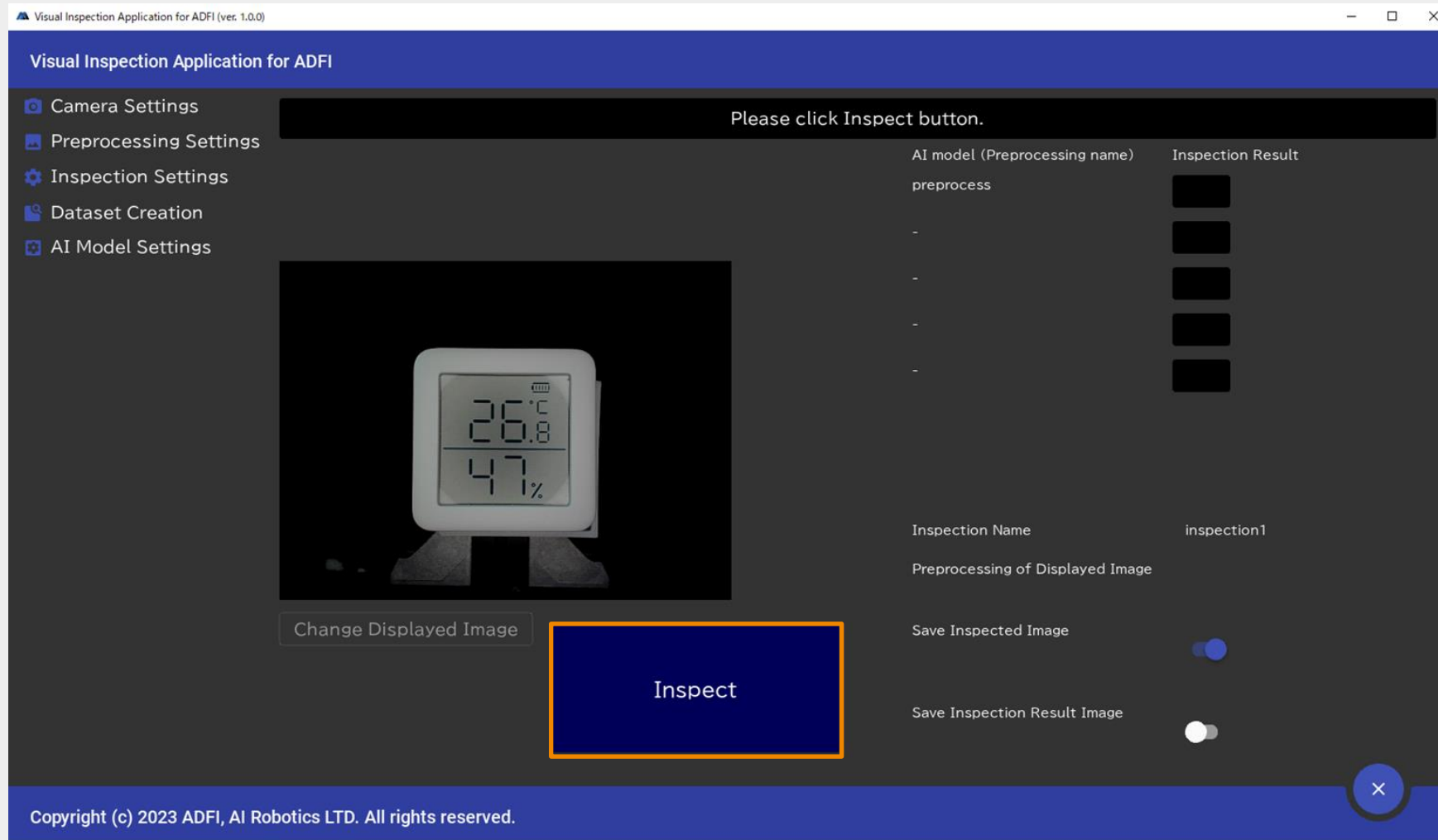
# 6. AI Model Settings

- Please click “Finish”.
- Setup is complete. Inspections can be started at any time.



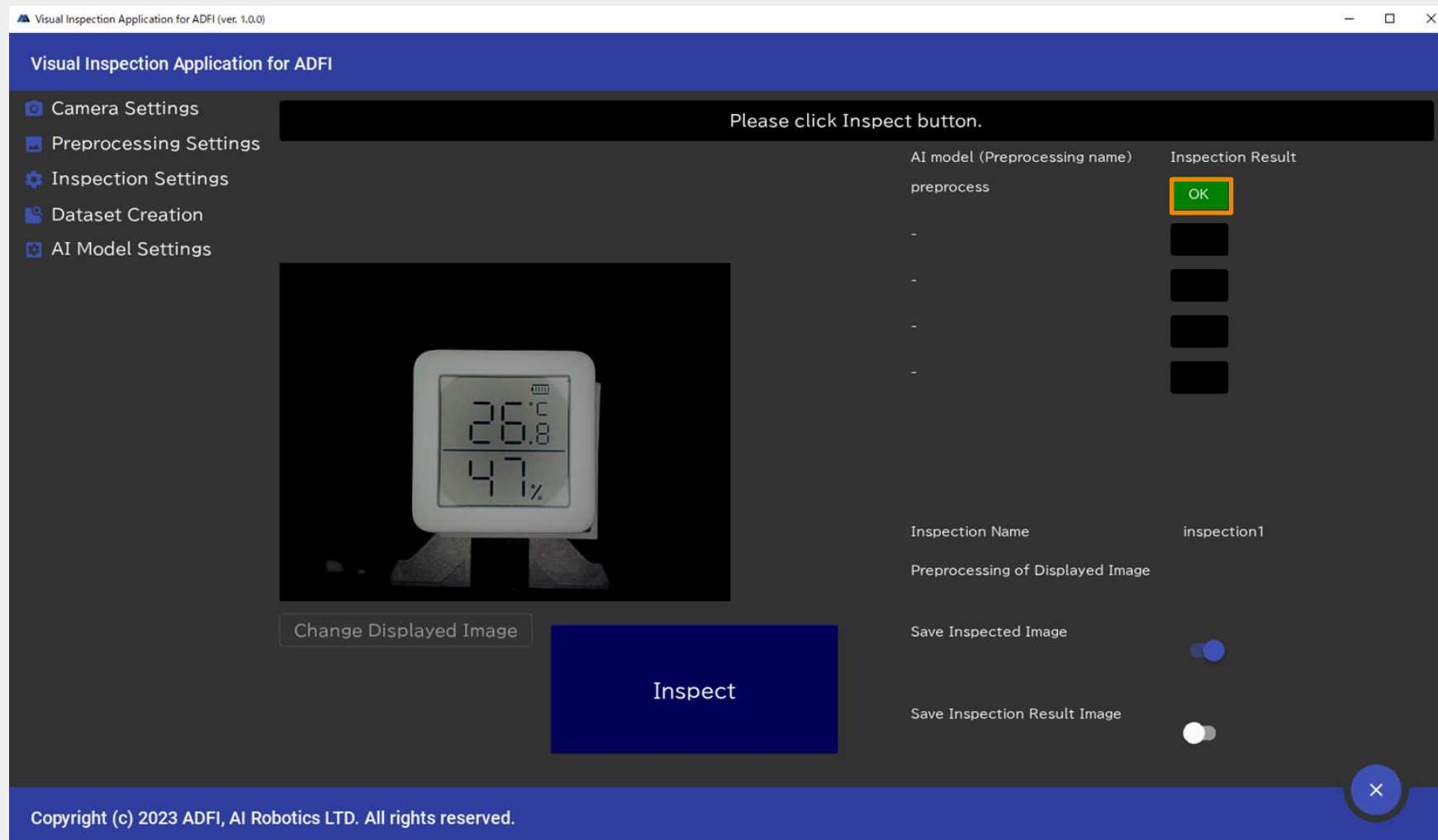
# 7. Inspection

- Please place the object you want to inspect and click "Inspection".



# 7. Inspection

- The inspection result (OK, NG or Not-clear) is displayed on the upper right.



# 7. Inspection

- You can view the saved images by clicking on the result(OK, NG or Not-clear) in the top right.

