

| | |
|---|------|
| ○ | 의사결정 |
| ● | 정보전달 |
| ○ | 지시사항 |

AI 플랫폼

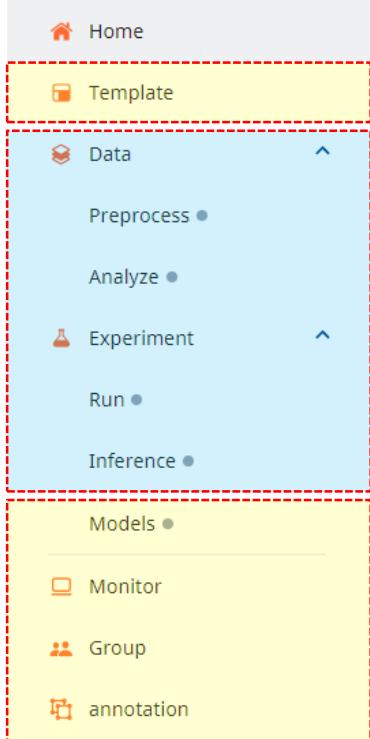
사용자 매뉴얼

최초작성: 2021.05.28
최종수정: 2021.06.03

- ◆ 작성자 : Surromind
- ◆ Version : 0.62

개요

저희 플랫폼은 프로그래밍 필요 없이 ‘비 전문가’도 쉽게 모델링 할 수 있는 AI Supporter입니다.



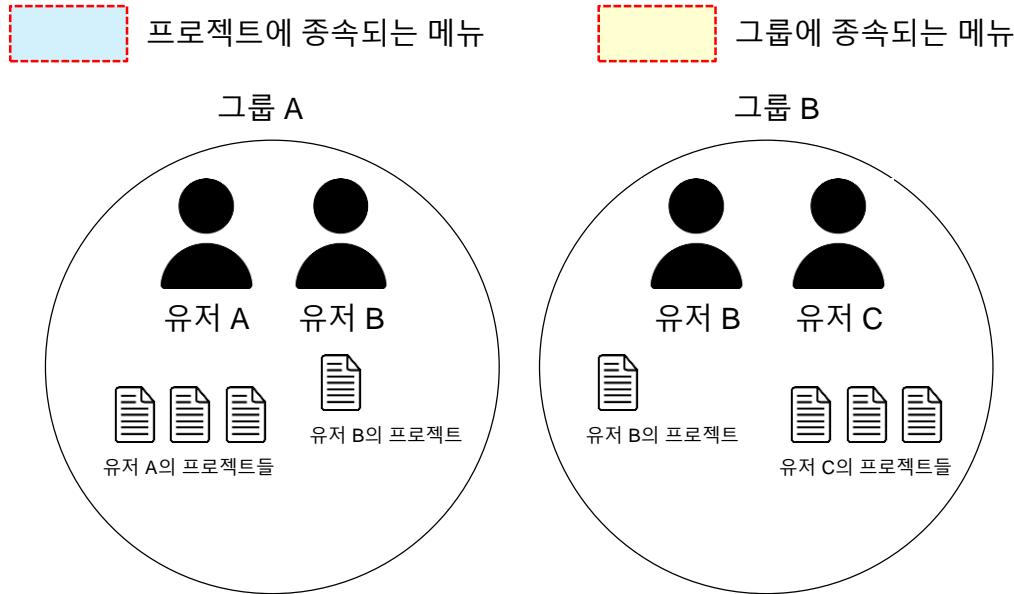
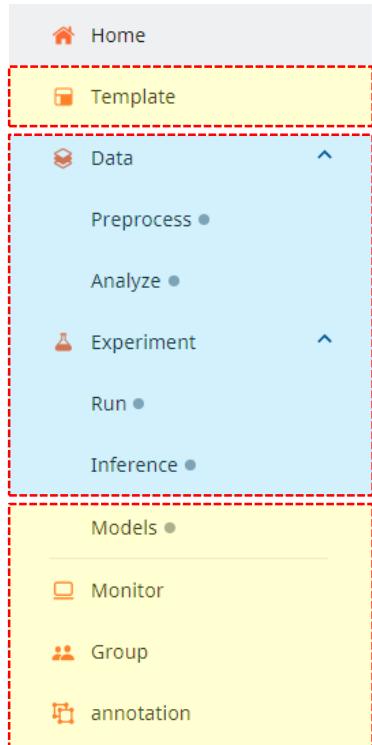
Data 메뉴에서 선택한 data를 Experiment 메뉴에서 마우스 클릭만으로 학습 가능

+

필요에 따라 유용하게 사용할 수 있는 여러 기능들 제공
자세한 설명은 1.2 동작 모드 및 사용자 작업 흐름 참고

개요

각 메뉴들은 프로젝트 또는 그룹에 종속되며 사용자는 여러 그룹에 속할 수 있고 여러 프로젝트를 만들 수 있습니다.



- 각 유저들은 본인이 속한 그룹에 종속된 Template, Models, Monitor, Group, Annotation을 조회 가능
- 유저 A : 그룹 A에 속한 유저 A, B의 프로젝트만 조회 가능
- 유저 B : 그룹 A, B에 속한 유저 A, B, C의 프로젝트들 모두 조회 가능
- 유저 C : 그룹 B에 속한 유저 B, C의 프로젝트만 조회 가능

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1. Dataset 준비하기

1.1 프로젝트 생성

1.2 Dataset 등록

1.3 데이터 전처리

1.4 Export to Experiment

1.1 프로젝트 생성

개발자 계정으로 로그인 하여 AI Platform의 Home 메뉴(1)에서 Create project 버튼(2)을 클릭합니다.

The screenshot shows the AI Platform's Home page. On the left, there is a sidebar with a user profile icon for 'dev-user1' and sections for Main, Home (which is selected), Template, Data, Preprocess, Analyze, Experiment, Run, Inference, Models, Monitor, Group, and annotation. The main area is titled 'Project' and contains a 'Statistics' section with four cards: 'Total Project' (51), 'Ready' (3), 'Working' (46), and 'Completed' (2). Below this is a table of projects with columns for PROJECT NAME, GROUP NAME, USER ID, DATA TYPE, MODEL, STATUS, CREATED, and UPDATED. A search bar and filter options are at the top of the table. At the bottom right of the table, there is a red box around the 'Create project +' button. The status column uses colored dots to indicate project status: blue for Working, orange for Ready, green for Completed, and grey for others.

| PROJECT NAME | GROUP NAME | USER ID | DATA TYPE | MODEL | STATUS | CREATED | UPDATED |
|-----------------------|-------------|-----------|-----------|-----------------------|-----------|------------|------------|
| djlee_od_pytorch | basic_group | dev-user1 | image | Detection | Working | 2021-06-02 | |
| tabular_proj | basic_group | dev-user1 | tabular | Classification | Ready | 2021-06-02 | |
| tabular_test123 | basic_group | dev-user1 | tabular | Classification | Working | 2021-06-01 | |
| test_hylim_0528 | basic_group | dev-user1 | image | Classification | Working | 2021-05-28 | |
| Test-IC-lee0527 | basic_group | dev-user1 | image | Classification | Completed | 2021-05-27 | 2021-06-02 |
| Test_ID_lee0527 | basic_group | dev-user1 | image | Detection | Completed | 2021-05-27 | 2021-05-27 |
| test | basic_group | dev-user1 | image | Classification | Working | 2021-05-21 | 2021-05-26 |
| hylim_ss_pytorch_0514 | basic_group | dev-user1 | image | Semantic Segmentation | Working | 2021-05-14 | |

1.1 프로젝트 생성

문제 정의(1)에 따라 Data 전처리 및 Algorithm 종류, Annotation 형태가 달라지게 됩니다. 목적에 맞게 선택 후 기본 정보(2)들을 입력하여 OK버튼을 클릭합니다.

SURROMIND

Project name: 프로젝트를 로드해주세요. Template Mode

New Project

dev-user1

Main

Home

Template

Data

Preprocess

Analyze

Experiment

Run

Inference

Models

Monitor

Group

annotation

* Definition

Data Type

Tabular Image

Model

Regression Classification

(1)

(2)

Cancel OK

* Name

내용을 입력해주세요.

* Group

basic_group

Framework

Others

Description

내용을 입력해주세요.

1.2 Dataset 등록

작업할 프로젝트를 선택 후 로드합니다.

The screenshot shows the SURROMIND Project management interface. On the left, there is a sidebar with user information (dev-user1) and navigation links: Main, Home, Template, Data, Preprocess, Analyze, Experiment, Run, Inference, Models, Monitor, Group, and annotation. The main area is titled 'Project' and contains a 'Statistics' section with four cards: 'Total Project' (53), 'Ready' (5), 'Working' (46), and 'Completed' (2). Below this is a search bar and a table listing datasets. The table has columns: PROJECT NAME, GROUP NAME, USER ID, DATA TYPE, MODEL, STATUS, CREATED, and UPDATED. The table lists several datasets:

| PROJECT NAME | GROUP NAME | USER ID | DATA TYPE | MODEL | STATUS | CREATED | UPDATED |
|------------------|-------------|-----------|-----------|----------------|-----------|------------|------------|
| Test-IC | basic_group | dev-user1 | image | Classification | Ready | 2021-06-03 | |
| shchoitest | basic_group | dev-user1 | image | Detection | Ready | 2021-06-03 | |
| djlee_od_pytorch | basic_group | dev-user1 | image | Detection | Working | 2021-06-02 | |
| tabular_proj | basic_group | dev-user1 | tabular | Classification | Ready | 2021-06-02 | |
| tabular_test123 | basic_group | dev-user1 | tabular | Classification | Working | 2021-06-01 | |
| test_hylim_0528 | basic_group | dev-user1 | image | Classification | Working | 2021-05-28 | |
| Test-IC-lee0527 | basic_group | dev-user1 | image | Classification | Completed | 2021-05-27 | 2021-06-02 |
| Test_ID_lee0527 | basic_group | dev-user1 | image | Detection | Completed | 2021-05-27 | 2021-05-27 |

At the bottom right, there are buttons for 'Create project' and 'Load project'. The 'Load project' button is highlighted with a red box.

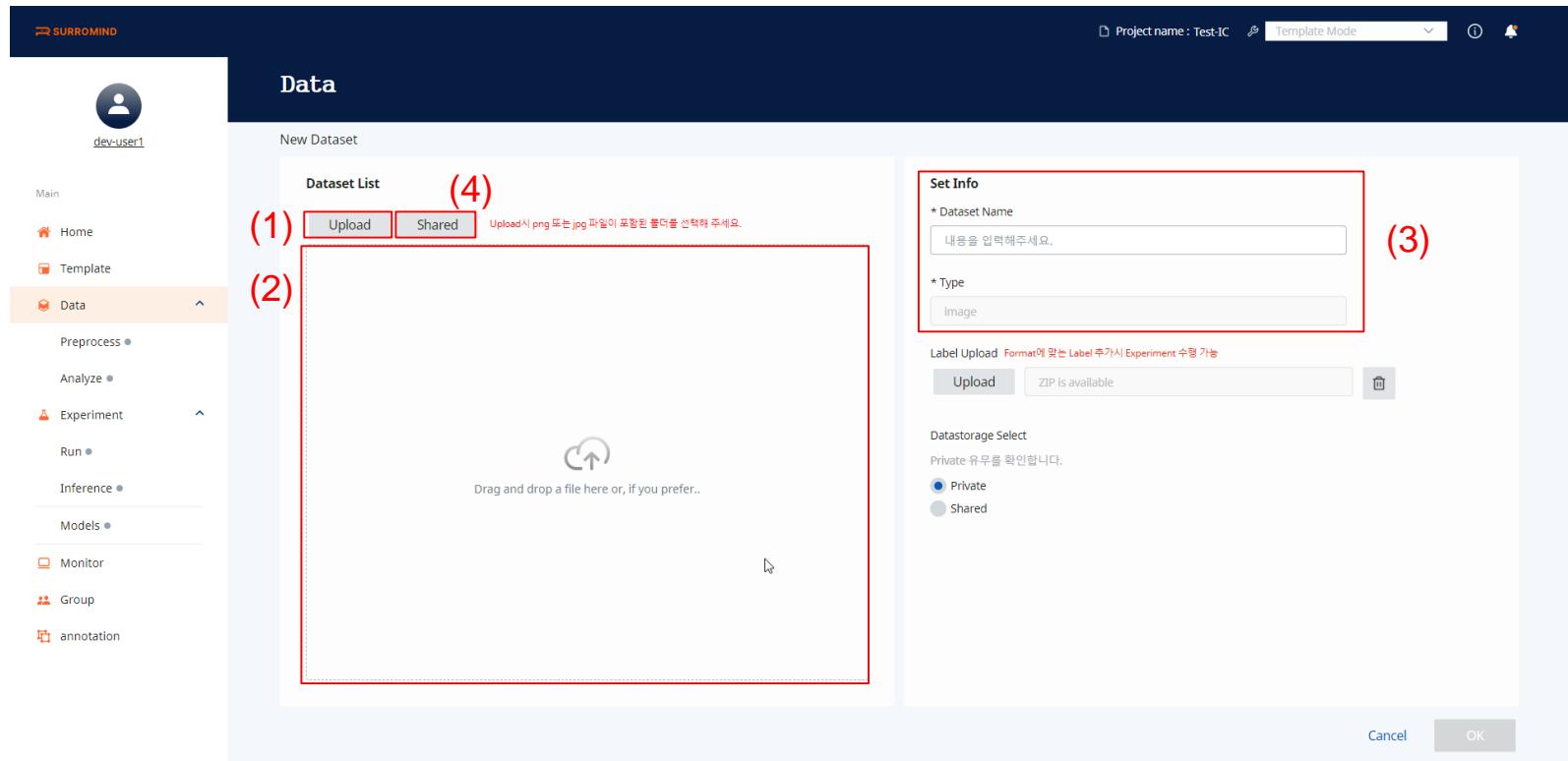
1.2 Dataset 등록

Data 메뉴(1)에서 New Dataset(2) 버튼을 클릭합니다.

The screenshot shows the SURROMIND Data interface. On the left, there is a sidebar with various menu items: Main, Home, Template, Data (highlighted with a red box labeled '(1)'), Preprocess, Analyze, Experiment (with Run and Inference sub-options), Models, Monitor, Group, and annotation. The main content area is titled 'Data' and has tabs for Private and Shared. It features a search bar with placeholder text '검색어를 입력해주세요.' and a 'Dataset Name(current)' dropdown. Below the search bar is a table header with columns: DATA SET NAME, VERSION, DATA TYPE, SIZE, CREATED, and LABEL. The table body contains a message '결과가 없습니다.' (No results). At the bottom right of the main content area, there is a blue button labeled 'New Dataset +' highlighted with a red box labeled '(2)'. The top right of the interface shows project information 'Project name : Test-IC' and 'Template Mode' with a dropdown arrow, along with user profile icons.

1.2 Dataset 등록

Upload버튼(1)이나 Drag and Drop(2)을 통해 데이터를 업로드 한 뒤, 기본정보(3)를 입력하여 data를 생성합니다.
Shared 버튼(4)을 통해 그룹 내에서 공유된 데이터셋을 가져올 수 있습니다.



1.2 Dataset 등록

Annotation 작업을 통해 Label을 등록할 것이기 때문에 Label Upload(1)는 하지 않습니다.
데이터의 공개여부(2)를 체크합니다. Shared를 선택하는 경우, 사용자 Group 내에서 공유됩니다.

The screenshot shows the SURROMIND platform interface for creating a new dataset. On the left, a sidebar menu includes options like Home, Template, Data (selected), Preprocess, Analyze, Experiment, Inference, Models, Monitor, Group, and annotation. The main area is titled 'Data' and shows a 'Dataset List' with tabs for 'Upload' (selected) and 'Shared'. A central box says 'Drag and drop a file here or, if you prefer...' with a circular arrow icon. To the right, a 'Set Info' panel contains fields for 'Dataset Name' (placeholder: 내용을 입력해주세요.) and 'Type' (placeholder: image). Below these are two red-bordered sections: 'Label Upload' (with a note about ZIP files) and 'Datastorage Select' (with radio buttons for 'Private' and 'Shared'). Red numbers (1) and (2) point to the 'Label Upload' section and the 'Datastorage Select' section respectively. At the bottom are 'Cancel' and 'OK' buttons.

Project name : Test-IC Template Mode

dev-user1

Main

Home

Template

Data

Preprocess

Analyze

Experiment

Inference

Models

Monitor

Group

annotation

Data

New Dataset

Dataset List

Upload Shared

Upload 시 png 또는 jpg 파일이 포함된 폴더를 선택해 주세요.

Drag and drop a file here or, if you prefer...

Set Info

* Dataset Name

내용을 입력해주세요.

* Type

image

Label Upload Format에 맞는 Label 주가시 Experiment 수령 가능

Upload ZIP is available

(1)

Datastorage Select

Private 유무를 확인합니다.

Private Shared

(2)

Cancel OK

1.3 데이터 전처리

Dataset의 우측의 More 버튼(1)을 선택 후 Preprocess 버튼(2)을 클릭합니다.

The screenshot shows the SURROMIND Data interface. On the left is a sidebar with navigation links: Home, Template, Data (selected), Preprocess, Analyze, Experiment, Run, Inference, Models, Monitor, Group, and annotation. The main area is titled "Data" and shows a list of datasets under the "Private" tab. A search bar at the top allows inputting "Dataset Name(current)" with placeholder text "김생아를 입력해주세요.". Below the search bar are filters for VERSION, DATA TYPE, SIZE, CREATED, and LABEL. A table lists one dataset: "test_dataset" (VERSION 1, DATA TYPE image, SIZE 3.2446 MB, CREATED 2021-06-03). To the right of the table is a context menu with options: Preprocess (highlighted with a red box and labeled (2)), Details, Add Label, and Download Dataset. A red box labeled (1) highlights the "More" button in the top right corner of the dataset row. At the bottom of the page are navigation buttons (double arrows, single arrows, and a central dot), a "New Dataset" button, and an "Export to Experiment" button.

| Dataset Name(current) | VERSION | DATA TYPE | SIZE | CREATED | LABEL |
|-----------------------|---------|-----------|-----------|------------|-------|
| test_dataset | 1 | image | 3.2446 MB | 2021-06-03 | |

Project name : Test-IC Template Mode

Preprocess (2)

(1)

New Dataset + Export to Experiment ↗

1.3 데이터 전처리

원하는 Method(1)를 선택한 후, Parameter(2)를 조정하여 Apply(4)를 클릭하면 전처리가 진행됩니다. 파라미터를 Default값으로 되돌리고 싶으면 Initialize(3), 전처리 완료 후 결과를 보고 싶으면 Result(5)를 클릭합니다.

The screenshot shows the SURROMIND Data Preprocess interface. On the left, a sidebar menu includes Home, Template, Data (selected), Preprocess (selected), Analyze, Experiment, Run, Inference, Models, Monitor, Group, and annotation. The main area is titled 'Data' and 'Data > Preprocess'. It displays 'Dataset Info' for 'test_dataset': Type image, Num Instances 42, Size 3.2446 MB, Version 1. To the right, a 'Choose Preprocess Method' section is highlighted with a red box, showing 'Flip' selected. Below it, the 'Parameters' section is also highlighted with a red box, showing 'flipCode' set to 1. At the bottom, three buttons are labeled with red numbers: (3) Initialize, (4) Apply, and (5) Result. A blue 'OK' button is at the bottom right. The top right of the interface shows 'Project name : Test-IC', 'Template Mode', and notification icons.

1.4 Export to Experiment

학습할 Dataset을 선택 후 Export to Experiment(1)를 클릭합니다. 이 과정을 통해 학습할 수 있는 draft 상태의 Experiment를 생성합니다. Experiment(2)메뉴에서 확인 해보실 수 있습니다.

The screenshot shows the SURROMIND Data interface. On the left, there is a sidebar with user information (dev-user1) and navigation links: Home, Template, Data (selected), Preprocess, Analyze, Experiment (highlighted with a red box), Run, Inference, Models, Monitor, Group, and annotation. The main area is titled 'Data' and shows a list of datasets under the 'Private' tab. A search bar at the top allows for filtering datasets by name. The table below lists four datasets:

| Dataset Name(current) | VERSION | DATA TYPE | SIZE | CREATED | LABEL |
|-----------------------|---------|-----------|-----------|------------|-----------|
| test | 2 | image | 3.3172 MB | 2021-06-03 | label.zip |
| test | 1 | image | 3.2497 MB | 2021-06-03 | label.zip |
| test_dataset | 2 | image | 3.3121 MB | 2021-06-03 | |
| test_dataset | 1 | image | 3.2446 MB | 2021-06-03 | |

At the bottom right, there are buttons for 'New Dataset' and 'Export to Experiment' (also highlighted with a red box). The 'Export to Experiment' button has a red box around it, indicating the step being described in the text above.

2. 학습하기

2.1 Run

2.2 HPO

2.3 AutoML

2.4 학습 완료 후

2.1 Run

저희 플랫폼에는 총 3가지 모드로 학습할 수 있습니다.

Data 메뉴에서 draft 상태(1)의 Experiment의 More버튼(2)을 클릭하면 Run/HPO/AutoML(3) 총 3가지의 학습 메뉴가 나타납니다.

The screenshot shows the SURROMIND platform's Experiment page. On the left is a sidebar with navigation links: Main, Home, Template, Data, Preprocess, Analyze, Experiment (which is selected and highlighted in orange), Run, Inference, Models, Monitor, Group, and annotation. The main content area has a dark header with the title "Experiment". Below the header is a search bar and a table with columns: ID, MODEL NAME, ALGORITHM NAME, DATASET NAME, STATUS, CREATED, RUN TIME, and DETAILS. A single row is visible in the table. The "STATUS" column contains a radio button labeled "draft" which is highlighted with a red box and labeled "(1)". The "DETAILS" column contains a dropdown menu with options "Run", "HPO", and "AutoML", which is also highlighted with a red box and labeled "(3)". A second red box labeled "(2)" surrounds the "More" button in the dropdown menu. At the bottom of the table, there is a "Change Model Name" button. Navigation icons at the bottom include double arrows, a left arrow, a right arrow, and a double right arrow.

| ID | MODEL NAME | ALGORITHM NAME | DATASET NAME | STATUS | CREATED | RUN TIME | DETAILS |
|-----|------------|----------------|--------------|----------------------------------------|------------|----------|--------------------------------------------------------------------------------|
| 996 | ● | | test / v2 | <input checked="" type="radio"/> draft | 2021-06-03 | 0m | <ul style="list-style-type: none">RunHPOAutoML |

2.1 Run

Run으로 학습을 시킬 경우, 사용자가 직접 Data Split(1), Algorithm(2), Resource(3)를 설정해주어야 합니다.

The screenshot shows the SURROMIND platform's 'Run' configuration screen. At the top, there is a dark header bar with the project name 'Test-IC' and a 'Template Mode' dropdown. Below the header is a sidebar on the left containing user information ('dev-user1') and a navigation menu with items like Home, Template, Data, Preprocess, Analyze, Experiment, Inference, Models, Monitor, Group, and annotation. The 'Experiment' item is currently selected and highlighted in orange. The main content area is titled 'Set Configuration' and contains three tabs: 'Data Split' (selected), 'Algorithm', and 'Resource'. The 'Data Split' tab is divided into three sections labeled (1), (2), and (3). Below these tabs is a table with four columns: Data, Algorithm, Parameter, and Resource. To the right of the table is a 'Start Train' button. At the bottom of the screen are two large, empty rectangular boxes labeled 'Log' and 'Progress'.

2.1 Run

모든 Setting이 완료되면 Start Train을 클릭하여 학습을 시작할 수 있습니다.

The screenshot shows the SURROMIND platform's 'Run' configuration page. The left sidebar shows the user profile 'dev-user1' and a navigation menu with 'Main', 'Home', 'Template', 'Data', 'Preprocess', 'Analyze', 'Experiment' (selected), 'Inference', 'Models', 'Monitor', 'Group', and 'annotation'. The main area has a dark header with 'Project name : Test-IC', 'Template Mode', and notification icons. Below the header is a 'Set Configuration' section with tabs for 'Data Split' (selected), 'Algorithm', and 'Resource'. The 'Configuration' table lists data splits, algorithm details, parameters, and resources. A large red box highlights the 'Start Train' button at the bottom right of the configuration table. Below the table are two sections: 'Log' (black placeholder) and 'Progress' (grey placeholder).

| Data | Algorithm | Parameter | Resource |
|-------------------------------------|---------------------------------------------|------------------------------------------------------------------|------------------------------------------------|
| Name Train Validation Test | Name resnet18 Size 1×10^6 | batch_size epoch learning_rate momentum weight_decay | 4 10 0.001 0.9 0.0005 |
| | | | Name GPU CPU RAM |
| | | | Preset3 RTX3090 1, 24000 4 core 16 GB |

Start Train

2.1 Run

학습이 진행되면 실시간으로 Log와 Progress 그래프를 볼 수 있습니다. 다른 메뉴로 이동해도 계속 진행됩니다.

The screenshot shows the SURROMIND platform's 'Run' interface. On the left, a sidebar menu includes 'Main', 'Home', 'Template', 'Data', 'Preprocess', 'Analyze', 'Experiment' (selected), 'Inference', 'Models', 'Monitor', 'Group', and 'annotation'. The 'Run' section is highlighted. In the center, a 'Set Configuration' panel has tabs for 'Data Split' (selected), 'Algorithm', and 'Resource'. The 'Configuration' table lists parameters like Name, Algorithm, and Resource settings. Below this is a 'Log' section containing training progress messages and a 'Progress' chart showing accuracy metrics over time.

Project name : Test-IC Template Mode

Run

dev-user1

Main

Home

Template

Data

Preprocess

Analyze

Experiment

Inference

Models

Monitor

Group

annotation

Run

Set Configuration

Data Split Algorithm Resource

Configuration

| Data | Algorithm | Parameter | Resource |
|------------|-----------|-----------------|---------------|
| Name | test | Name | batch_size |
| Train | 80(%) | resnet18 | 4 |
| Validation | 10(%) | Size | epoch |
| Test | 10(%) | 1×10^6 | learning_rate |
| | | | momentum |
| | | | weight_decay |

Log

```
[tensorrt/stream_executor/platform/default/dso_loader.cc:55] Successfully opened dynamic library libcurl.so.11
2021-06-03 01:50:30.966329: [tensorflow/stream_executor/cuda/cuda_blas.cc:183]
TensorFloat-32 will be used for the matrix multiplication. This will only be logged once.

train 1 / 10: 11% | 1/9 [00:02<00:16, 2.01s/t]
train 1 / 10: 22% | 2/9 [00:02<00:06, 1.03it/s]
train 1 / 10: 33% | 3/9 [00:02<00:04, 1.42it/s]
train 1 / 10: 44% | 4/9 [00:03<00:02, 1.74it/s]
train 1 / 10: 56% | 5/9 [00:03<00:01, 2.21it/s]
train 1 / 10: 67% | 6/9 [00:03<00:01, 2.31it/s]
train 1 / 10: 78% | 7/9 [00:03<00:00, 2.56it/s]
train 1 / 10: 89% | 8/9 [00:04<00:00, 2.82it/s]
train 1 / 10: 100% | 9/9 [00:04<00:00, 2.90it/s]
```

Progress

metric

train_accuracy valid_accuracy

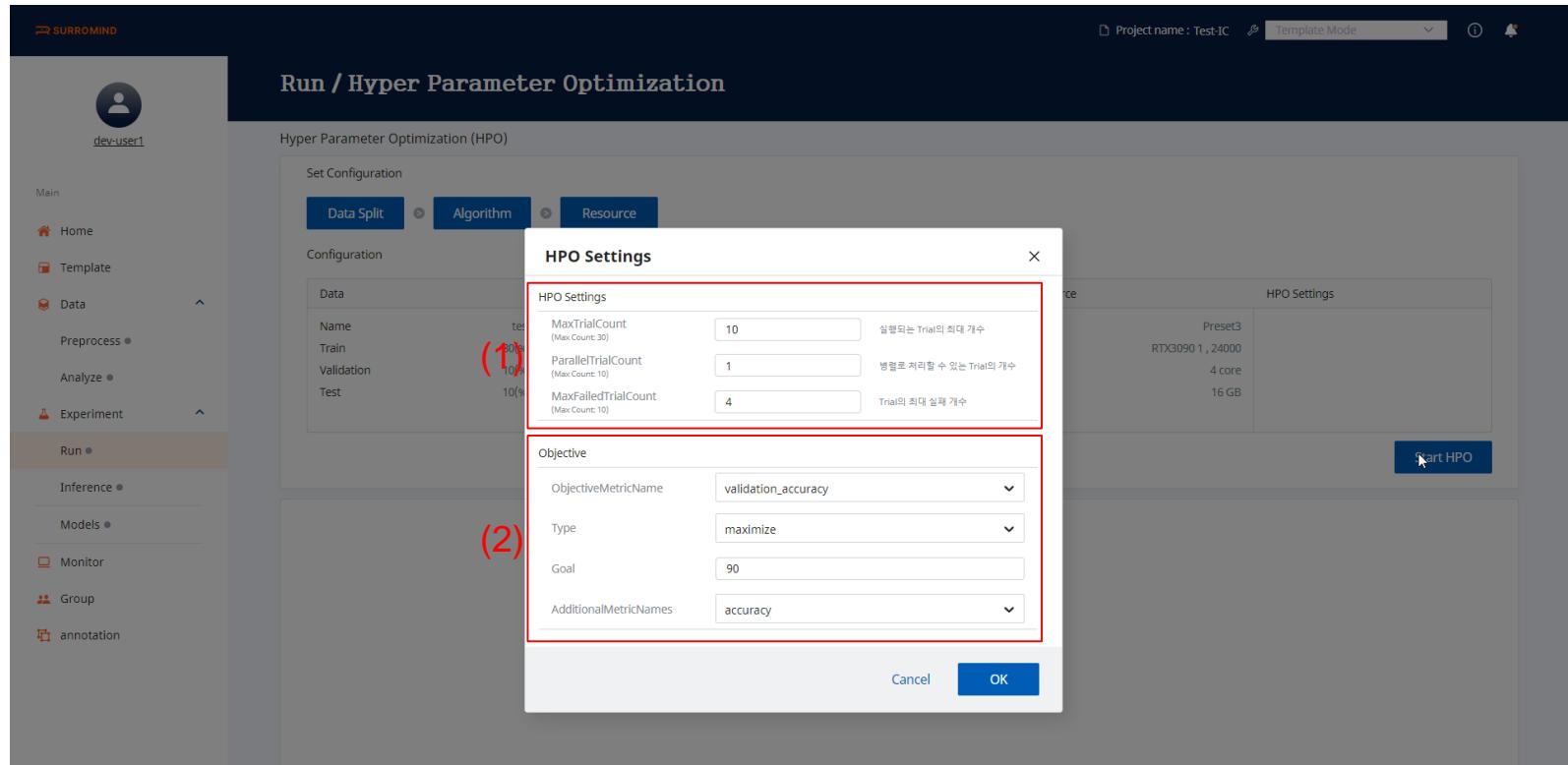
2.2 HPO

HPO로 학습을 시킬 경우, 사용자가 직접 Data Split, Algorithm, Resource를 설정해주어야 하는 것은 Run과 동일합니다. 단, Algorithm화면에서 HPO를 적용할 파라미터를 체크해야 합니다. HPO 여부가 체크된 항목은 최적의 성능을 찾기 위해 내부 알고리즘에 따라 자동으로 값을 바꾸어 여러 번 학습됩니다.

The screenshot shows the SURROMIND platform's 'Run / Hyper Parameter Optimization' interface. On the left, there is a sidebar with various project and experiment management options. The main area displays the 'Hyper Parameter Optimization (HPO)' configuration screen. A modal window titled 'Algorithm' is open, listing two algorithms: 'resnet18' and 'densenet121'. Below this, another modal window titled 'Parameter' lists four hyperparameters: 'batch_size' (value 4), 'epoch' (value 10), 'learning_rate' (value 0.001), and 'momentum' (value 0.9). The 'learning_rate' row has a red box drawn around its 'HPO 여부' (HPO Enabled) checkbox, indicating that this parameter is set to be optimized by the HPO process. At the bottom right of the 'Parameter' modal, there are 'Cancel' and 'OK' buttons.

2.2 HPO

Start HPO를 클릭하면 나타나는 HPO Settings입니다. HPO 구동에 관한 설정(1)과 모델 성능 평가를 위한 지표(2)를 설정합니다.



2.2 HPO

앞에서 설정한 ObjectMetric(1)이 Goal이상 도달할 경우 HPO가 중단되며 이전 단계에서 HPO여부가 체크되어 내부에서 선택된 파라미터값(2)을 확인할 수 있습니다. 원하는 Trial을 선택한 후 Submit(3) 할 수 있습니다. Trial을 Submit 하기 전까지 해당 Experiment는 계속 running상태로 유지됩니다.

The screenshot shows the SURROMIND platform interface for Hyper Parameter Optimization. The left sidebar shows the user profile (dev-user1) and navigation menu with 'Run' selected. The main area has tabs for Data Split, Algorithm, and Resource, with Configuration selected. The Configuration table includes columns for Data, Algorithm, Parameter, Resource, and HPO Settings. The Trial List table shows two trials: hpo-20210603-105812-l4gdj5nw and hpo-20210603-105812-b7jg4frb, with columns for Trial Name, Status, Validation Accuracy, Accuracy, Learning Rate, Batch Size, and Details. Red boxes highlight the 'VALIDATION_ACCURACY' column for the first trial (1), the 'VALIDATION_ACCURACY' and 'LEARNING_RATE' columns for both trials (2), and the 'Submit' button at the bottom right (3).

| TRIAL NAME | STATUS | VALIDATION_ACCURACY | ACCURACY | LEARNING_RATE | BATCH_SIZE | DETAILS |
|------------------------------|-----------|---------------------|----------|---------------|------------|----------------------|
| hpo-20210603-105812-l4gdj5nw | succeeded | 50.0 | 52.9412 | 0.1 | 32 | View |
| hpo-20210603-105812-b7jg4frb | succeeded | 100.0 | 88.2353 | 0.001 | 4 | View |

(1) (2) (3)

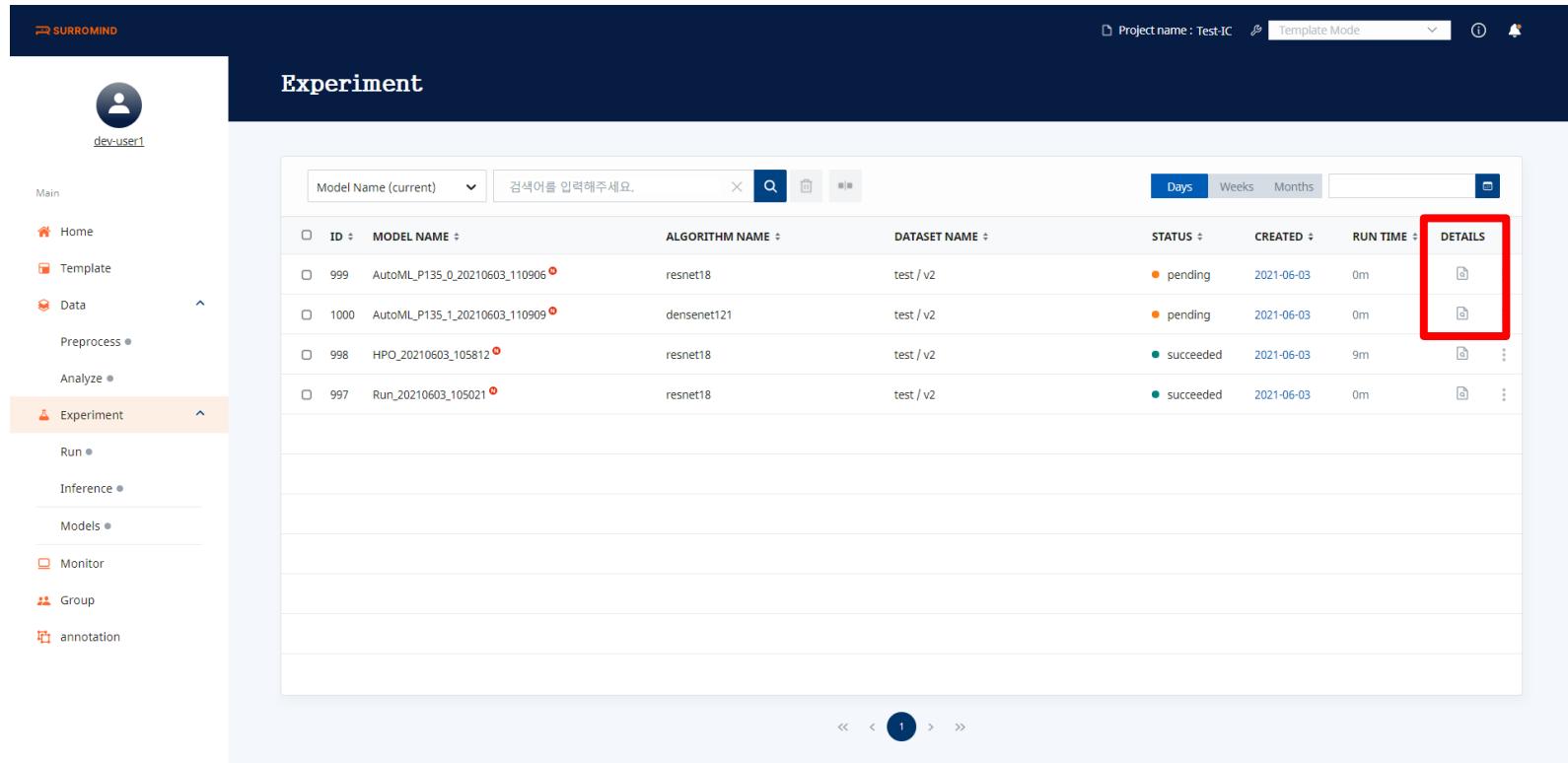
2.3 AutoML

AutoML은 Run이나 HPO와는 달리 별다른 설정 없이 바로 학습을 진행할 수 있습니다. 원하는 알고리즘을 선택(모두 선택 가능)후 바로 Start AutoML(1)을 클릭하여 학습을 시작해주세요. 알고리즘별 Data split, Parameter값을 변경(2)할 수도 있습니다.

The screenshot shows the SURROMIND platform's Run / AutoML interface. On the left, a sidebar menu is visible with categories like Home, Template, Data, Preprocess, Analyze, Experiment, Run, Inference, Models, Monitor, Group, and annotation. The 'Run' category is currently selected and highlighted in orange. The main content area has a dark blue header bar with the title 'Run / AutoML' and a user profile icon. Below the header is a search bar labeled 'Algorithm Name(current)' and a search button. A table titled 'Algorithm List' displays two entries: 'resnet18' (INDEX 1, Complexity 1×10^6 , Size 11.37) and 'densenet121' (INDEX 2, Complexity 5×10^6 , Size 7.41). To the right of the table, a large red box labeled '(1)' surrounds the 'Start AutoML' button. Another red box labeled '(2)' surrounds a detailed configuration panel for the selected 'resnet18' algorithm. This panel includes sections for 'Data' (Data name: test), 'Train' (80 %), 'Validation' (10 %), 'Test' (10 %), 'Algorithm' (Algorithm name: resnet18), 'Parameter' (batch_size: 4, epoch: 10, learning_rate: 0.001, momentum: 0.9), and an 'Edit' button.

2.3 AutoML

AutoML은 이전 단계에서 선택한 Algorithm 개수만큼 Experiment가 생성됩니다. Details을 클릭하면 Run화면과 동일한 화면을 볼 수 있습니다.



The screenshot shows the SURROMIND AutoML interface. On the left is a sidebar with navigation links: Main, Home, Template, Data, Preprocess, Analyze, Experiment (which is selected and highlighted in orange), Run, Inference, Models, Monitor, Group, and annotation. The main content area is titled 'Experiment'. It features a search bar at the top with a placeholder '검색어를 입력해주세요.' and a date filter section with 'Days', 'Weeks', and 'Months' buttons. Below is a table listing five experiments:

| ID | MODEL NAME | ALGORITHM NAME | DATASET NAME | STATUS | CREATED | RUN TIME | DETAILS |
|------|-------------------------------|----------------|--------------|-----------|------------|----------|-----------|
| 999 | AutoML_P135_0_20210603_110906 | resnet18 | test / v2 | pending | 2021-06-03 | 0m | [Details] |
| 1000 | AutoML_P135_1_20210603_110909 | densenet121 | test / v2 | pending | 2021-06-03 | 0m | [Details] |
| 998 | HPO_20210603_105812 | resnet18 | test / v2 | succeeded | 2021-06-03 | 9m | [Details] |
| 997 | Run_20210603_105021 | resnet18 | test / v2 | succeeded | 2021-06-03 | 0m | [Details] |

At the bottom of the table, there are navigation arrows: '<<', '<', '1', '>', and '>>'. The 'DETAILS' column header is highlighted with a red box.

2.4 학습 완료 후

학습이 정상적으로 완료되면 Experiment가 succeeded(1)로 변경됩니다. Details(2)를 클릭하여 상세정보를 볼 수 있으며, More 버튼(3)을 클릭하여 해당 Experiment를 Test해 볼 수 있는 메뉴(4), 지금까지 설정 값들(Dataset 전처리, 학습 setting값들)을 Template으로 저장 해놓을 수 있는 메뉴(5) 모델 Repository에 등록할 수 있는 메뉴(6)들이 있습니다.

The screenshot shows the SURROMIND Experiment management interface. On the left, there is a sidebar with user information (dev-user1) and navigation links for Main, Home, Template, Data, Preprocess, Analyze, Experiment (which is currently selected and highlighted in orange), Run, Inference, Models, Monitor, Group, and annotation. The main content area is titled "Experiment". It displays a table of completed experiments (Status: succeeded). The columns are ID, MODEL NAME, ALGORITHM NAME, DATASET NAME, STATUS, CREATED, RUN TIME, and DETAILS. The first experiment (ID 999) has its DETAILS row highlighted with a red box and numbered (2). The DETAILS row for the second experiment (ID 1000) is also highlighted with a red box and numbered (3). A "More" button in the DETAILS row of the second experiment is highlighted with a red box and numbered (4). A "Save as a template" button is highlighted with a red box and numbered (5). A "Register Model" button is highlighted with a red box and numbered (6). The table also includes sorting and filtering options like Days, Weeks, Months, and a search bar at the top.

| ID | MODEL NAME | ALGORITHM NAME | DATASET NAME | STATUS | CREATED | RUN TIME | DETAILS |
|------|-------------------------------|----------------|--------------|-----------|------------|----------|---------|
| 999 | AutoML_P135_0_20210603_110906 | resnet18 | test / v2 | succeeded | 2021-06-03 | 1m | (2) |
| 1000 | AutoML_P135_1_20210603_110909 | densenet121 | test / v2 | succeeded | 2021-06-03 | 1m | (3) |
| 998 | HPO_20210603_105812 | resnet18 | test / v2 | succeeded | 2021-06-03 | 9m | (4) |
| 997 | Run_20210603_105021 | resnet18 | test / v2 | succeeded | 2021-06-03 | 0m | (5) |

3. 평가하기

3.1 Inference

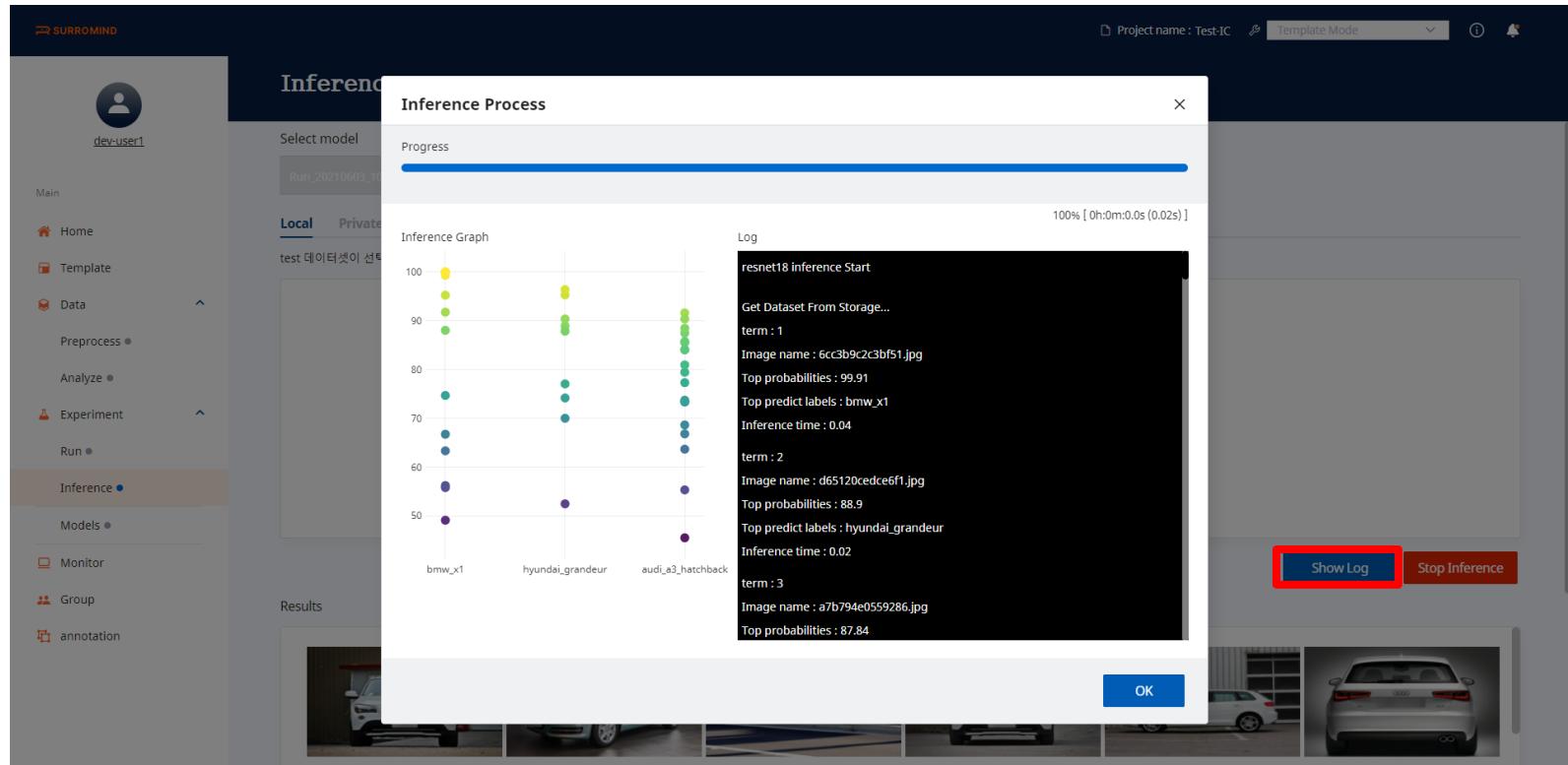
3.1 Inference

Experiment에서 Inference를 선택하면 보이는 화면입니다. 사용자의 PC에서 Data(1)/프로젝트 내에서만 공유된 Data(2)/그룹 내에서 공유된 Data(3)를 업로드할 수 있습니다. Data가 업로드 되면 바로 Start Inference(4)를 클릭하여 모델을 평가할 수 있습니다.

The screenshot shows the SURROMIND Inference interface. On the left is a sidebar with navigation items: Main, Home, Template, Data, Preprocess, Analyze, Experiment, Run, Inference (which is highlighted), Models, Monitor, Group, and annotation. The main area has a dark header with the project name "Test-IC" and "Template Mode". The "Inference" section title is at the top. Below it, there's a "Select model" dropdown containing "(1)" (Run_20210429_105021(current)), "(2)", and "(3)". Three buttons below the dropdown are "Local" (highlighted with a red box), "Private", and "Shared". A message "데이터셋을 선택해주세요." is displayed above a file upload area. This area includes an "Upload" button with an upward arrow icon, a "Delete" button with a trash bin icon, and a placeholder text "외부 데이터를 불러옵니다." followed by "Drag and drop a file here or, if you prefer..". At the bottom right of this area is a red box around the "Start Inference" button. To its left is a "Show Log" button.

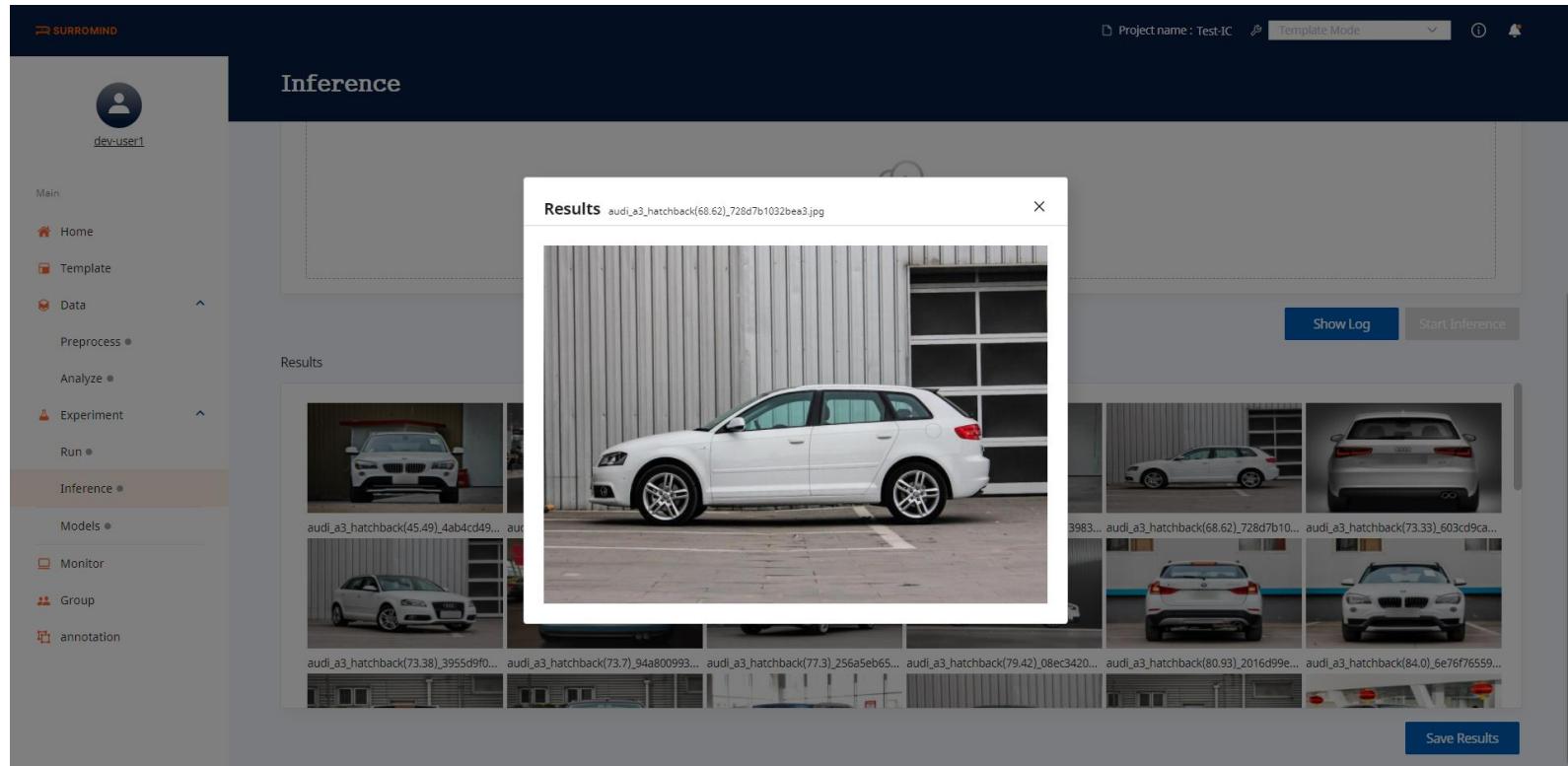
3.1 Inference

Show Log 버튼을 클릭하면 진행 상황을 볼 수 있습니다.



3.1 Inference

Inference가 완료되면 이미지를 클릭하여 결과를 확인해볼 수 있습니다. 로드한 프로젝트의 문제정의별로 Result가 다릅니다.



4. 재사용하기

4.1 Template

4.2 데이터 전처리

4.3 학습

4.1 Template

Experiment에서 Save as a template을 통해 Template으로 저장하면, 학습 시 설정한 값들(Dataset 전처리, 학습 Algorithm, Parameter 등)이 저장되어 Template을 로드만 하면 동일한 조건으로 dataset만 바꾸어 사용할 수 있습니다. 상단의 'Template mode로 변경' 영역(1)이나 Template 메뉴(2)를 통해 해당 화면으로 이동합니다. 원하는 Template 선택 후 Load Template(3)을 클릭합니다.

The screenshot shows the SURROMIND WorkFlow Template interface. On the left, there is a sidebar with user information (dev-user1) and various menu items: Main, Home, Data, Preprocess, Analyze, Experiment, Inference, Models, Monitor, Group, and annotation. The 'Template' item under Experiment is highlighted with a red box and labeled '(2)'. At the top right, there is a 'Template Mode' overlay window with a red border. Inside the overlay, the status is shown as 'Template Mode 중지' (Template Mode suspended) with a start date of '2021-06-03'. A button labeled 'Template mode로 변경' (Change to Template mode) is visible. The main content area displays a table titled 'WorkFlow Template' with columns: TEMPLATE NAME, GROUP NAME, DATASET NAME, CREATED, and CREATOR. One row is selected, showing 'IC-template' under TEMPLATE NAME, 'basic_group' under GROUP NAME, 'test' under DATASET NAME, '2021-06-03' under CREATED, and 'dev-user1' under CREATOR. To the right of the table, there is a 'Detail' section containing a line chart titled 'metric' showing 'train_accuracy' (blue line) and 'valid_accuracy' (red line) over time (x-axis from 0 to 10). Below the chart, sections for 'Model' and 'Resource' provide specific details about the run.

(1) Template Mode Overlay

(2) Template Menu

(3) Load Template Button

4.2 데이터 전처리

Template이 로드되면 Template mode(1)가 됩니다. 어떤 Dataset을 선택해도 Template에 저장된 전처리 Method(1)로만 진행됩니다. Method를 변경할 수 없으며, 변경하고 싶을 경우 Template Mode를 취소(2)해야 합니다.

The screenshot shows the SURROMIND Data Preprocess interface. On the left, there is a sidebar with various project management and monitoring options. The main area is titled 'Data' and shows 'Dataset Info' for a dataset named 'test' (Type: image, Num Instances: 42, Size: 3.3172 MB, Version: 2). Below this is a 'Pipeline' section with one entry: NUM 1, DATA 2021-06-03, and PREPROCESS Flip. At the bottom right of the main area are 'Apply' and 'Result' buttons, and a large blue 'OK' button at the bottom right of the entire window.

(1) Choose Preprocess Method

- Method: Flip
- About: Flip/mirror input images horizontally/vertically.
- Parameters:
 - flipCode: 1

(2) Template Mode

- Status: 동작중
- Start date: 2021-06-03 11:16:25
- Template mode 취소

4.3 학습

Template이 로드되면 Template mode가 됩니다. Template에 저장된 학습 Setting으로 진행되기 때문에 Run 메뉴만 나타납니다.

The screenshot shows the SURROMIND platform interface in 'Template Mode'. The top navigation bar includes 'Project name : Test-IC', 'Template Mode', and user icons. The left sidebar menu is collapsed, showing 'dev-user1' at the top, followed by 'Main', 'Home', 'Template', 'Data', 'Preprocess', 'Analyze', 'Experiment' (which is expanded), 'Run', 'Inference', 'Models', 'Monitor', 'Group', and 'annotation'. The main content area is titled 'Experiment' and displays a table of model runs. The table columns are: ID, MODEL NAME, ALGORITHM NAME, DATASET NAME, STATUS, CREATED, RUN TIME, and DETAILS. The table rows show the following data:

| ID | MODEL NAME | ALGORITHM NAME | DATASET NAME | STATUS | CREATED | RUN TIME | DETAILS |
|------|-------------------------------|----------------|--------------|-----------|------------|----------|---------------------|
| 1001 | AutoML_P135_0_20210603_110906 | resnet18 | test / v2 | draft | 2021-06-03 | 0m | [Run] |
| 999 | AutoML_P135_1_20210603_110909 | densenet121 | test / v2 | succeeded | 2021-06-03 | 1m | [Change Model Name] |
| 1000 | HPO_20210603_105812 | resnet18 | test / v2 | succeeded | 2021-06-03 | 1m | [Run] |
| 998 | Run_20210603_105021 | resnet18 | test / v2 | succeeded | 2021-06-03 | 9m | [Run] |
| 997 | | | | succeeded | 2021-06-03 | 0m | [Run] |

Pagination controls at the bottom indicate page 1 of 1.

4.3 학습

Template mode인 경우에는 Template에 저장된 학습 Setting으로만 진행됩니다. Setting 값을 변경할 수 없으며, 변경하고 싶을 경우 Template Mode를 취소해야 합니다. Resource만 변경 가능합니다.

The screenshot shows the SURROMIND platform's 'Run' configuration interface. On the left, there is a sidebar with user information (dev-user1) and navigation links: Main, Home, Template, Data, Preprocess, Analyze, Experiment, Run (selected), Inference, Models, Monitor, Group, and annotation. The main area has tabs for Set Configuration (Data Split, Algorithm, Resource - selected), Configuration, Log, and Progress. The Configuration table is highlighted with a red box:

| Data | Algorithm | Parameter | Resource | | | |
|-------------------------------------|---------------------------------|---------------------------------------------|------------------------------------------------------------------|-----------------------------------|---------------------------|------------------------------------------------|
| Name Train Validation Test | test 80(%) 10(%) 10(%) | Name resnet18 Size 1×10^6 | batch_size epoch learning_rate momentum weight_decay | 4 10 0.001 0.9 0.0005 | Name GPU CPU RAM | Preset3 RTX3090 1, 24000 4 core 16 GB |

A blue 'Start Train' button is located at the bottom right of the configuration panel. Below it are two empty panels for 'Log' and 'Progress'.

5. 모델 저장하기

5.1 Models

5.2 포맷 변환

5.1 Models

Experiment에서 Register Model을 통해 저장하면, 같은 그룹 내에서 공유할 수 있도록 Model Repository에 등록이 됩니다. 모델을 선택하면 상세 화면으로 이동됩니다.

The screenshot shows the SURROMIND platform's Model Repository page. On the left, there is a sidebar with navigation links: Home, Template, Data, Preprocess, Analyze, Experiment, Run, Inference, Models (which is highlighted in orange), Monitor, Group, and annotation. The main area is titled "Models" and contains a table titled "Model Repository". The table has columns: MODEL NAME, GROUP NAME, VERSION, VERSION LIMIT, CREATED, and UPDATED. A search bar at the top of the table allows filtering by "Model Name(current)" or "검색어를 입력해주세요." (Search term). The table lists several models, with one row for "gg" highlighted by a red box. The "gg" row contains the following data:

| MODEL NAME | GROUP NAME | VERSION | VERSION LIMIT | CREATED | UPDATED |
|-------------------------------------|-------------|---------|---------------|---------------------|---------------------|
| cluster-transfer-test | basic_group | 3 | - | 2021-05-28 11:36:32 | 2021-06-01 10:19:59 |
| gg | basic_group | 3 | - | 2021-05-18 16:29:08 | 2021-05-28 17:58:52 |
| hae_model | basic_group | 2 | - | 2021-05-14 14:33:13 | 2021-05-14 14:36:04 |
| tag_test | basic_group | 5 | - | 2021-05-07 14:20:37 | 2021-05-10 10:15:26 |
| semantic-segmentation-pytorch-model | basic_group | 12 | - | 2021-05-03 17:46:22 | 2021-05-18 13:07:21 |
| tabular-classification-model1 | basic_group | 1 | - | 2021-05-03 16:30:02 | 2021-05-03 16:30:02 |
| IC-resNet-format-conversion | basic_group | 7 | - | 2021-04-30 15:04:53 | 2021-05-07 14:02:48 |
| IC-denseNet-format-conversion | basic_group | 5 | - | 2021-04-30 15:03:44 | 2021-05-07 14:52:50 |
| CCTV | basic_group | 2 | - | 2021-04-29 17:55:12 | 2021-05-03 16:05:43 |
| test | basic_group | 1 | - | 2021-04-28 17:45:00 | 2021-04-28 17:45:00 |
| PT_OD_Auto | basic_group | 8 | - | 2021-04-28 17:25:45 | 2021-04-28 17:26:24 |

Pagination controls at the bottom of the table allow for navigating through multiple pages of results.

5.1 Models

같은 이름으로 모델을 등록하면 Version up(1)이 되어 저장됩니다. 최대 버전 수를 지정(2)하여 자동 삭제(3)되도록 설정할 수 있습니다. 또한, 모델을 클릭(4)하여 모델 환경 설정을 할 수 있습니다.

The screenshot shows the SURROMIND platform's Model Repository. On the left, a sidebar menu includes Main, Home, Template, Data, Preprocess, Analyze, Experiment, Run, Inference, Models (which is selected and highlighted in orange), Monitor, Group, and annotation. The Models section contains a sub-menu with Home, Template, and Data. The main content area is titled 'Models' and shows a 'Model Repository' for a model named 'gg'. The repository displays three versions of the model, each created by 'dev-user1'. The columns are labeled VERSION, DEVELOPER, STATUS, CREATED, and UPDATED. The first version was created on 2021-05-18 16:29:08 and updated on 2021-05-18 16:29:50. The second version was created on 2021-05-28 17:58:52 and updated on 2021-05-28 17:58:52. The third version is the most recent, created on 2021-05-28 17:58:52 and updated on 2021-05-28 17:58:52. A modal window is open over the table, containing fields for 'Version up' (radio button selected), 'Automatic Deletion' (radio button selected), and 'Maximum Version Number' (text input set to 3). A note below the input field states: 'When the maximum version number is reached, older versions will be automatically deleted starting from the latest version.' The modal has a 'Save' button at the bottom. Red numbers and boxes highlight specific features: (1) points to the 'VERSION' column header of the table; (2) points to the 'Maximum Version Number' input field in the modal; (3) points to the 'Automatic Deletion' radio button in the modal; and (4) points to the row containing the third model version in the table. The top right of the interface shows project details ('Project name: Test-IC', 'Template Mode'), user information ('dev-user1'), and notification icons.

| VERSION | DEVELOPER | STATUS | CREATED | UPDATED |
|---------|-----------|--------|---------------------|---------------------|
| 1 | dev-user1 | | 2021-05-18 16:29:08 | 2021-05-18 16:29:50 |
| 3 | dev-user1 | | 2021-05-28 17:58:52 | 2021-05-28 17:58:52 |
| 2 | dev-user1 | | 2021-05-18 16:29:50 | 2021-05-18 16:29:50 |

5.1 Models

모델을 Download(1)하거나 Description(2), 포맷 변환(3), Tag설정(4)을 하면 Log(5)에 기록됩니다.

The screenshot shows the SURROMIND Model Repository interface. On the left, there is a sidebar with various project categories: Main, Home, Template, Data, Preprocess, Analyze, Experiment, Run, Inference, Models (which is highlighted in orange), Monitor, Group, and annotation. The main area is titled "Models" and contains a "Model Repository". A model named "gg-Version1" is listed with a red box around its name and a red number "(1)" above it. Below the model name are its details: Add date : 2021-05-18 16:29:08, Modified date : 2021-05-28 18:25:00, Python Ver : 3.6.9, Framework : Pytorch, ID : 056d752232d74273b9cded13e23d0a6c, and Developer : dev-user1. To the right of these details is a back arrow icon. Below the model details, there are five numbered red boxes: (2) Description, (3) 포맷 변환 (Format Conversion), (4) Tag, and (5) Log. The "포맷 변환" section contains two dropdown menus: "현재 포맷" (Current Format) set to Pytorch and "변환할 포맷" (Convert to Format) set to ONNX, with a "Start" button below them. The "Log" section is a table with the following data:

| INDEX | MODIFIED | CONTENT | MODIFIER |
|-------|---------------------|---------------------------|-----------|
| 1 | 2021-05-18 16:29:05 | ONNX conversion completed | dev-user1 |

5.2 포맷 변환

모델의 Framework를 Pytorch나 Tensorflow에서 ONNX로 변환할 수 있습니다.

The screenshot shows the SURROMIND Model Repository interface. On the left, there is a sidebar with navigation links: Main, Home, Template, Data, Preprocess, Analyze, Experiment, Run, Inference, Models (which is selected), Monitor, Group, and annotation. The main content area is titled "Models" and shows a list of models. One model, "gg-Version1", is selected and displayed in detail. The details include: Add date : 2021-05-18 16:29:08, Modified date : 2021-05-28 18:25:00, Python Ver : 3.6.9, Framework : Pytorch, ID : 056d752232d74273b9cded13e23d0a6c, and Developer : dev-user1. Below this, there is a "Description" section with a "Format Conversion" subsection. This subsection contains fields for "현재 포맷" (Pytorch) and "변환할 포맷" (ONNX), with a "Start" button. A red box highlights this "Format Conversion" section. At the bottom of the model detail page, there are sections for "Tag" and "Log". The "Log" section contains a table:

| INDEX | MODIFIED | CONTENT | MODIFIER |
|-------|---------------------|---------------------------|-----------|
| 1 | 2021-05-18 16:29:50 | ONNX conversion completed | dev-user1 |

6. Annotation

6.1 일감 발행

6.2 공동 Annotation 작업(작업 분배)

6.3 Annotation 시작

6.4 화면 구성

6.5 Auto Annotation

6.6 작업 저장과 완료

6.7 Image Classification

6.8 Object Detection

6.9 Instance Segmentation

6.1 일감 발행

방금 생성한 Dataset의 우측의 More 버튼(1)을 선택 후 Add Label 버튼(2)을 클릭합니다.

The screenshot shows the SURROMIND Data management interface. On the left is a sidebar with navigation links like Home, Template, Data (which is selected and highlighted in orange), Preprocess, Analyze, Experiment, Run, Inference, Models, Monitor, Group, and annotation. The main area is titled "Data" and shows a list of datasets under the "Private" tab. The list includes:

| Dataset Name (current) | VERSION | DATA TYPE | SIZE | CREATED | LABEL |
|------------------------|---------|-----------|-----------|------------|-----------|
| test-annotation | 1 | image | 3.2446 MB | 2021-06-03 | label.zip |
| test | 2 | image | 3.3172 MB | 2021-06-03 | label.zip |
| test | 1 | image | 3.2497 MB | 2021-06-03 | label.zip |
| test_dataset | 2 | image | 3.3121 MB | 2021-06-03 | label.zip |
| test_dataset | 1 | image | 3.2446 MB | 2021-06-03 | label.zip |

A context menu is open over the first dataset in the list, with two items highlighted with red boxes and numbers:

- (1) More: A dropdown menu with options: Preprocess, Details, Label (highlighted with a red box), and Download Dataset.
- (2) Add Label: A button in the "Label" section of the context menu.

At the bottom of the page, there are navigation buttons (double arrows, single arrows, page number 1, double arrows) and buttons for "New Dataset" and "Export to Experiment".

6.2 공동 Annotation 작업(작업 분배)

Annotator를 통해 Label을 추가할 경우, 보이는 화면입니다. 아래 화면은 로그인한 계정의 그룹에 이미 Annotator 3명과 개발자 1명이 있는 상태입니다. 작업을 분배할 대상을 선택(1)하면 이미지 개수/작업자 인원수로 자동 분배(2)합니다.

(1)

| INDEX | NAME | START | END |
|-------|-----------------|-------|-----|
| 1 | dev-user1(mine) | 0 | 0 |
| 2 | anno-user1 | 0 | 0 |
| 3 | anno-user2 | 0 | 0 |
| 4 | anno-user3 | 0 | 0 |

선택한 Annotation의 수 만큼 자동으로 이미지 갯수를 분배합니다.

Cancel OK

(2)

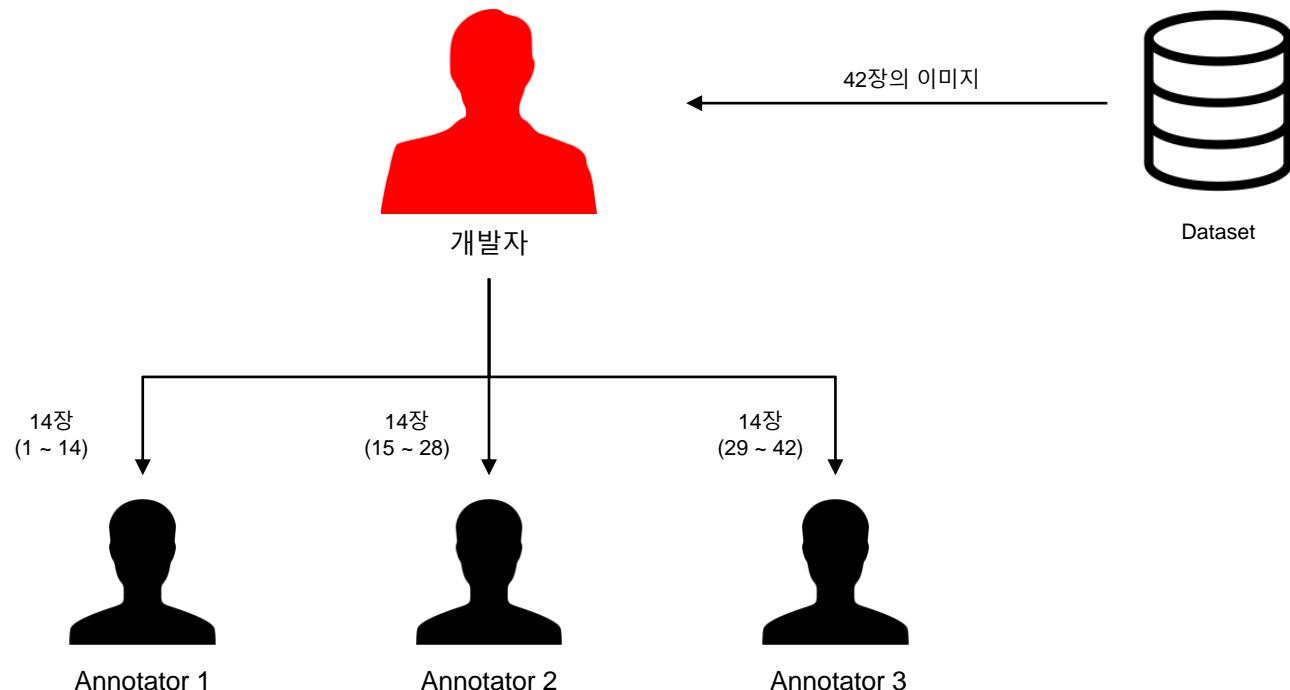
| INDEX | NAME | START | END |
|-------|-----------------|-------|-----|
| 1 | dev-user1(mine) | 0 | 0 |
| 2 | anno-user1 | 1 | 14 |
| 3 | anno-user2 | 15 | 28 |
| 4 | anno-user3 | 29 | 42 |

선택한 Annotation의 수 만큼 자동으로 이미지 갯수를 분배합니다.

Cancel OK

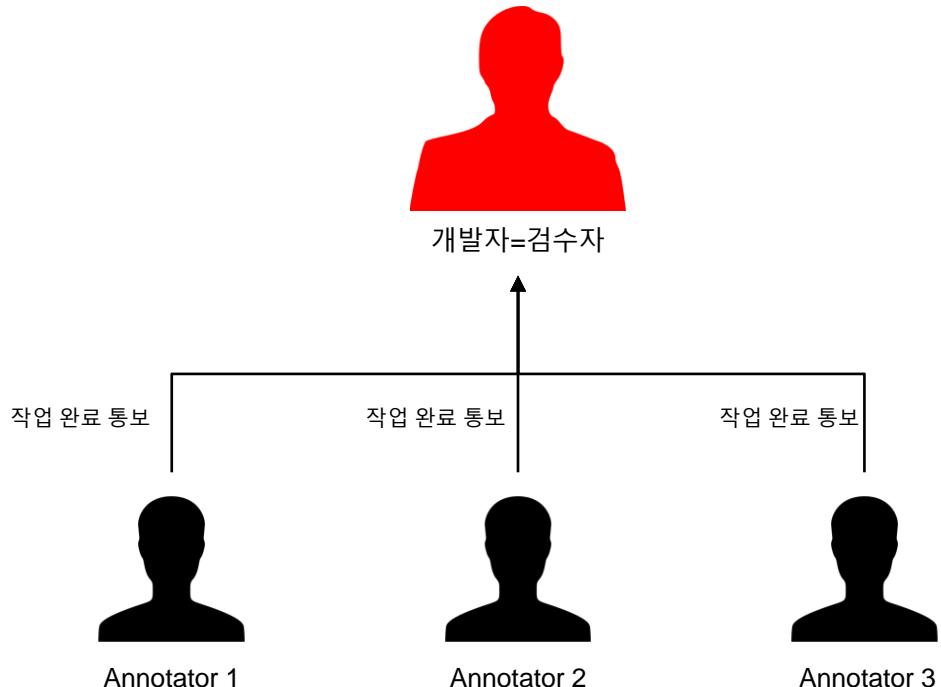
6.2 공동 Annotation 작업(작업 분배)

만약 개발자가 Annotator 3명에 작업을 분배했다면, 각 Annotator들은 ‘이미지 개수/작업자’ 만큼 일감을 할당 받습니다.



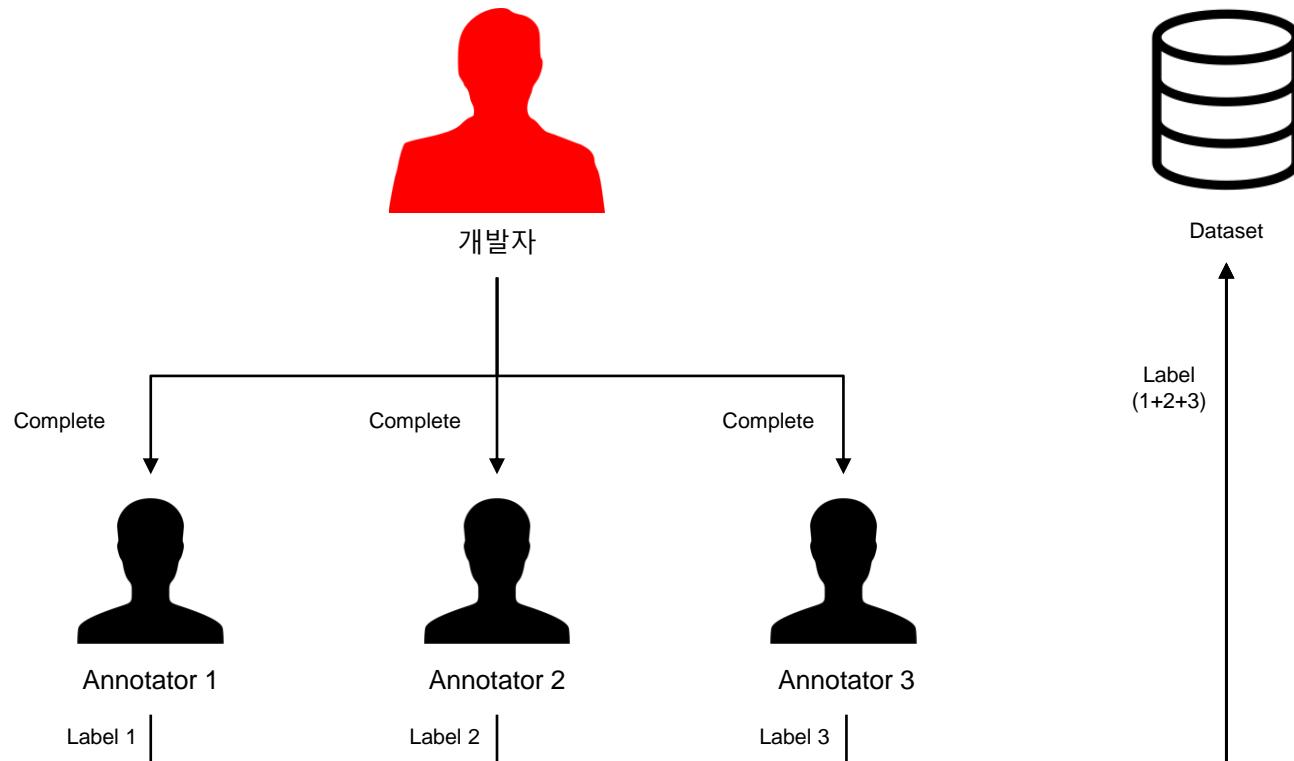
6.2 공동 Annotation 작업(작업 분배)

개발자는 Annotator 작업자들의 ‘검수자’ 역할을 합니다. 각 Annotator들은 작업을 마친 후 검수자에게 완료 통보를 합니다.



6.2 공동 Annotation 작업(작업 분배)

분배되었던 모든 Annotation 작업이 완료 처리가 되면, 모든 Label을 하나로 합쳐 자동으로 해당 Dataset에 Label이 추가됩니다.



6.3 Annotation 시작

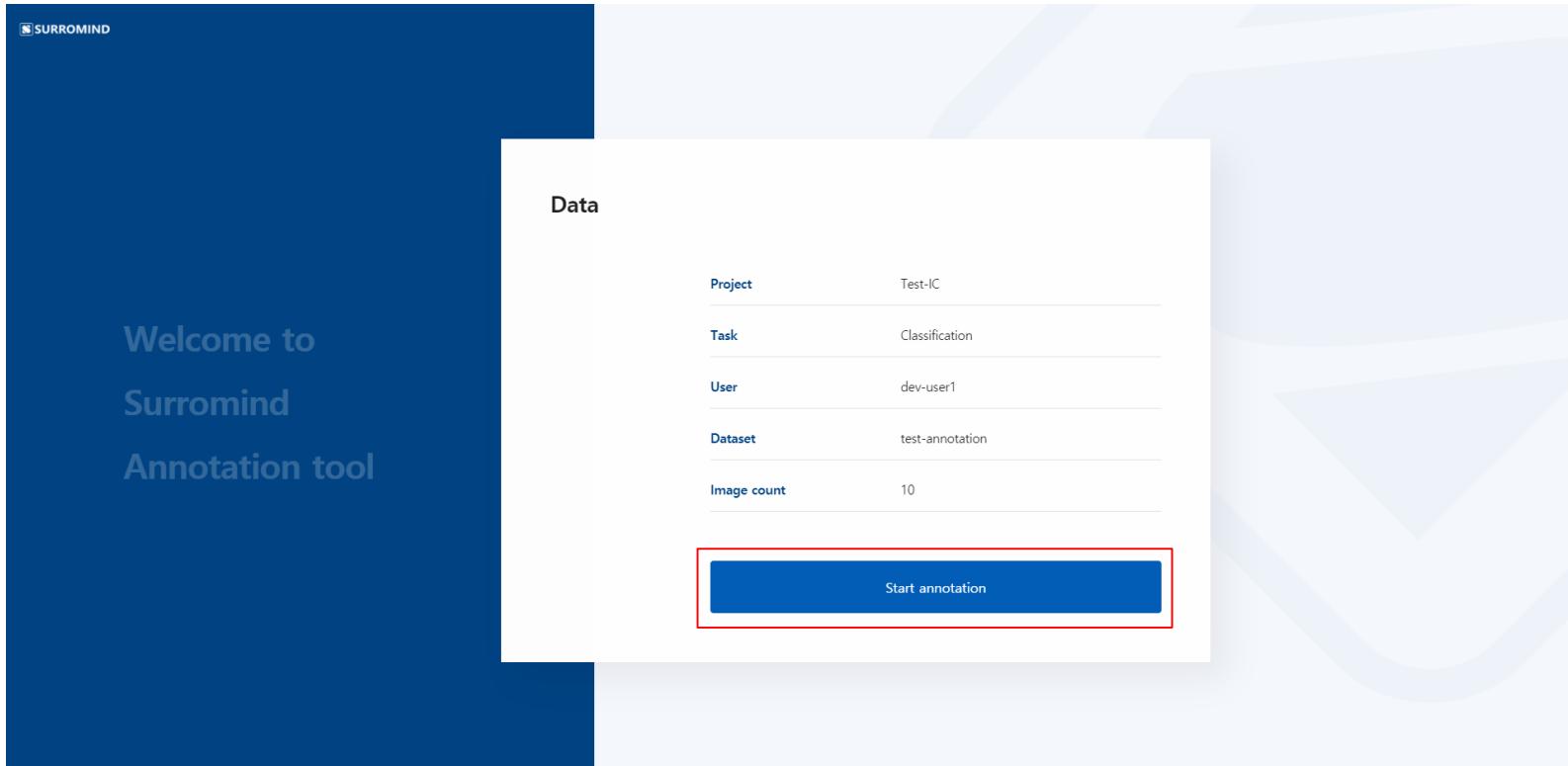
Annotation 메뉴(1)에서 앞 단계에서 Add Label을 추가한 Dataset(2)이 생성되었습니다. More버튼(3)을 클릭하여 Show annotation 버튼(4)을 통해 Annotation 전용 화면으로 이동합니다.

The screenshot shows the SURROMIND Annotation interface. On the left, there is a navigation sidebar with various project and experiment management options. The 'annotation' option under the 'Data' section is highlighted with a red box and labeled (1). The main area displays a table of datasets, with the first dataset, 'test-annotation', highlighted by a red box and labeled (2). To the right of the table, a 'More' button is highlighted with a red box and labeled (3). A red box also surrounds the 'Show annotation' link next to the 'More' button, labeled (4).

| Dataset Name (current) | Project Name | Type | Model | Total | Status | Annotator | Created | Updated |
|------------------------|----------------------------------|-------|-----------------------|-------|-----------|-----------|------------|------------|
| test-annotation | Test-IC | image | Classification | 0-9 | Working | dev-user1 | 2021-06-03 | - |
| pecotek_0528_hylim_172 | test_hylim_0528 | image | Classification | 0-171 | Completed | dev-user1 | 2021-05-28 | (4) |
| test888 | je-instance-segmentation-pytorch | image | Instance Segmentation | 0-1 | Completed | dev-user1 | 2021-05-28 | 2021-05-28 |
| test777 | je-instance-segmentation-pytorch | image | Instance Segmentation | 0-1 | Completed | dev-user1 | 2021-05-28 | 2021-05-28 |
| test666 | je-instance-segmentation-pytorch | image | Instance Segmentation | 0-1 | Completed | dev-user1 | 2021-05-28 | 2021-05-28 |
| test555 | je-instance-segmentation-pytorch | image | Instance Segmentation | 2-3 | Completed | dev-user1 | 2021-05-28 | 2021-05-28 |
| IC-lee052702 | Test-IC-lee0527 | image | Classification | 0-41 | Completed | dev-user1 | 2021-05-27 | 2021-05-27 |
| OD_LEE072701 | Test_OD_lee0527 | image | Detection | 0-29 | Completed | dev-user1 | 2021-05-27 | 2021-05-27 |
| test444 | je-instance-segmentation-pytorch | image | Instance Segmentation | 0-1 | Completed | dev-user1 | 2021-05-24 | 2021-05-24 |
| test333 | je-instance-segmentation-pytorch | image | Instance Segmentation | 0-1 | Completed | dev-user1 | 2021-05-24 | 2021-05-24 |
| test222 | je-instance-segmentation-pytorch | image | Instance Segmentation | 0-1 | Completed | dev-user1 | 2021-05-24 | 2021-05-24 |

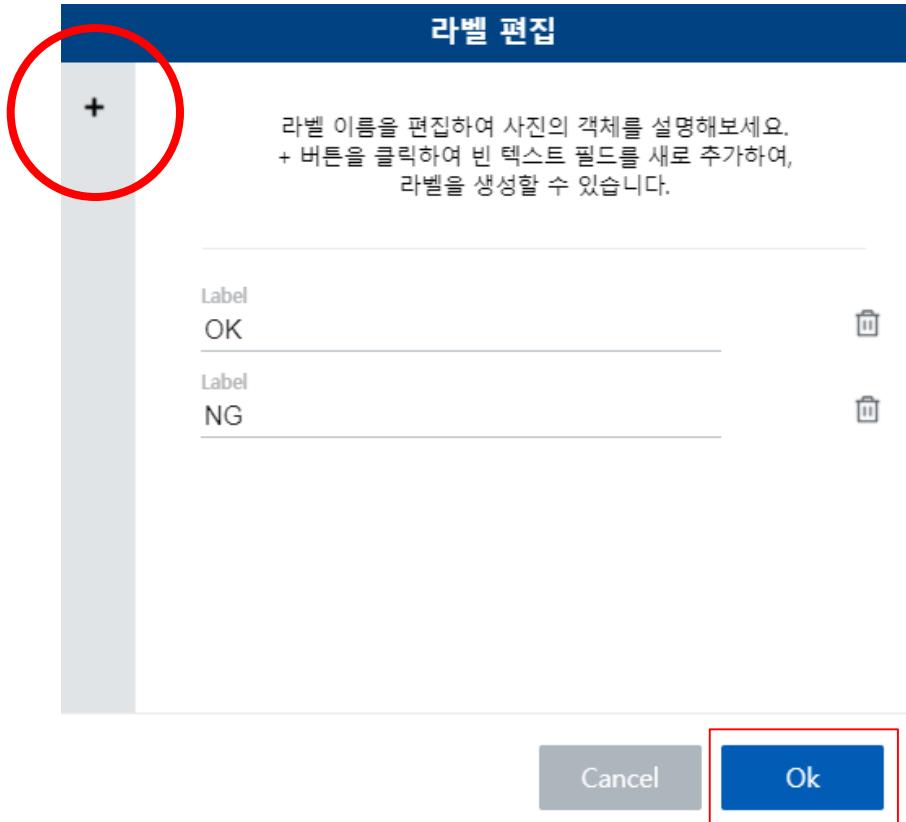
6.3 Annotation 시작

Annotation 전용 화면으로 이동후, Start Annotation 버튼을 클릭합니다.



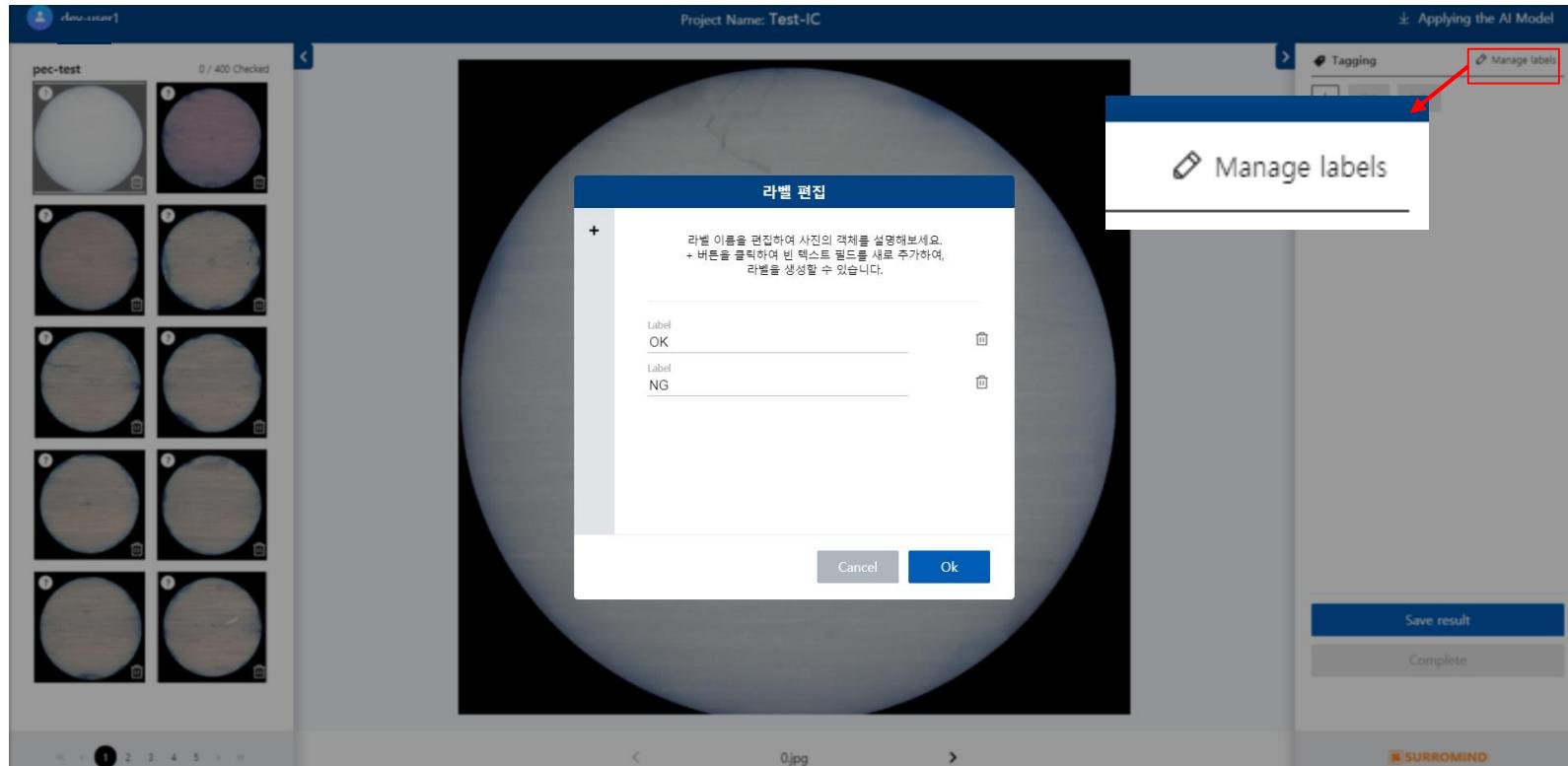
6.3 Annotation 시작

Label 편집기의 + 버튼을 눌러 Label을 추가합니다.
Label을 모두 추가한 후에 Ok 버튼을 클릭합니다.



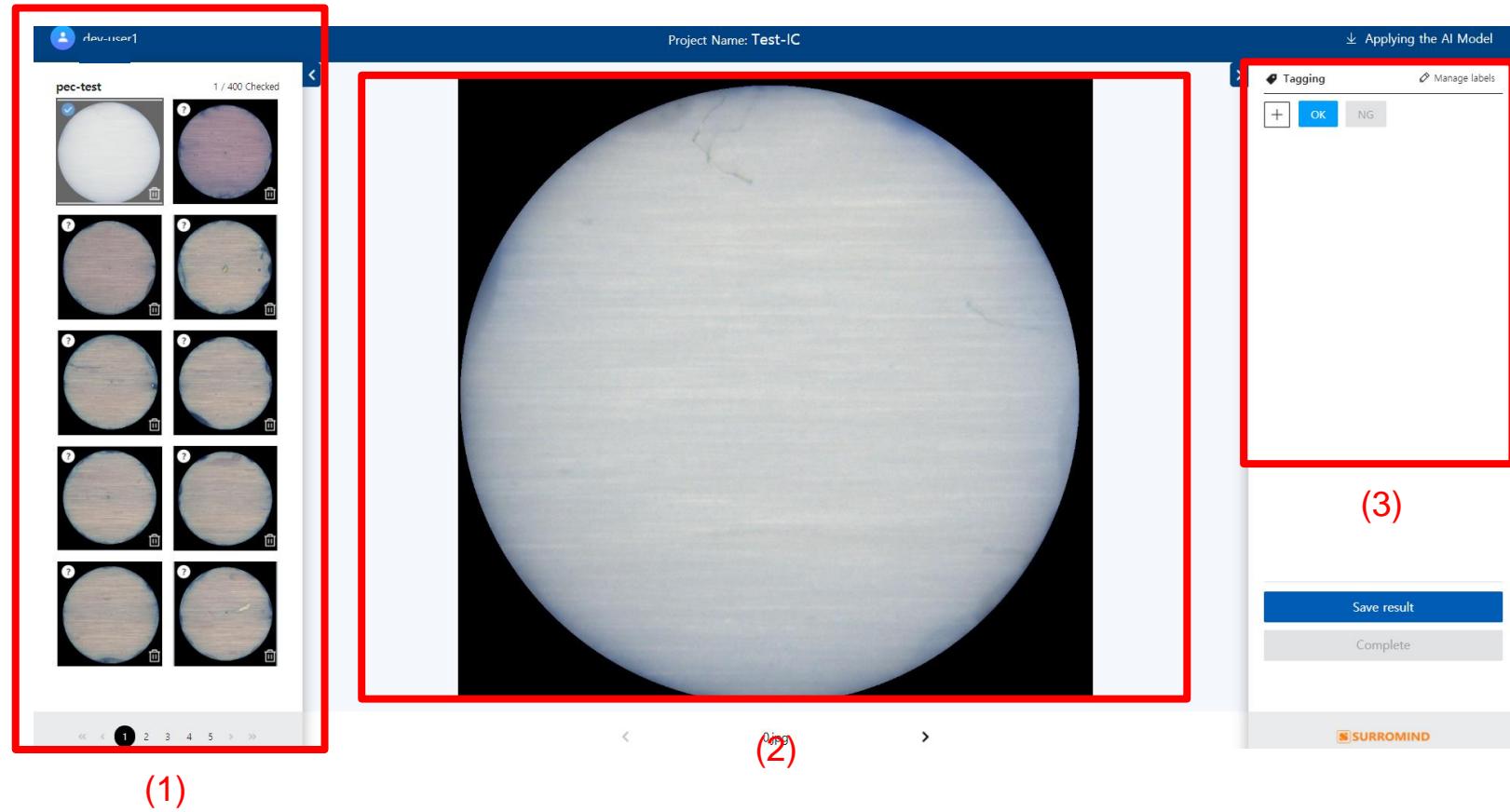
6.3 Annotation 시작

작업 중에도 화면 우측 상단에 있는 **Manage labels** 버튼을 클릭하여 Label 편집기를 오픈하여 수정할 수 있습니다.



6.4 화면 구성

크게 작업 대상이 될 이미지 영역(1), annotation 작업 영역(2), Tagging 영역(3)으로 구성됩니다.



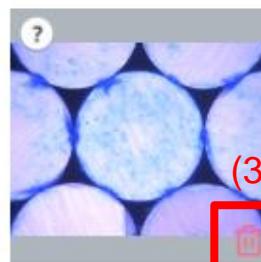
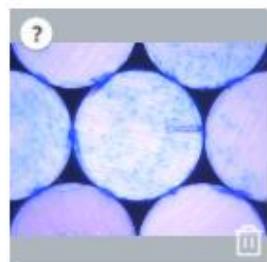
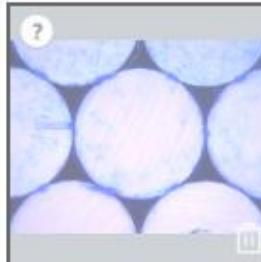
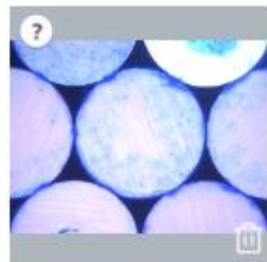
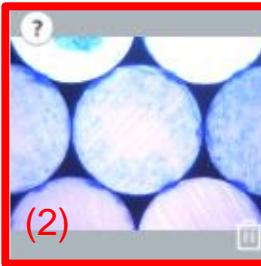
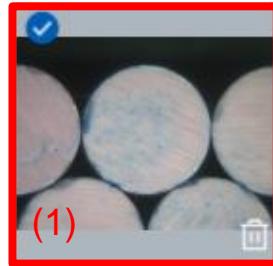
(1)

(2)

(3)

6.4 화면 구성

작업이 완료된 이미지(1)와 완료되지 않은 이미지(2)를 구분하실 수 있으며, 작업에서 삭제(3)하실 수 있습니다.

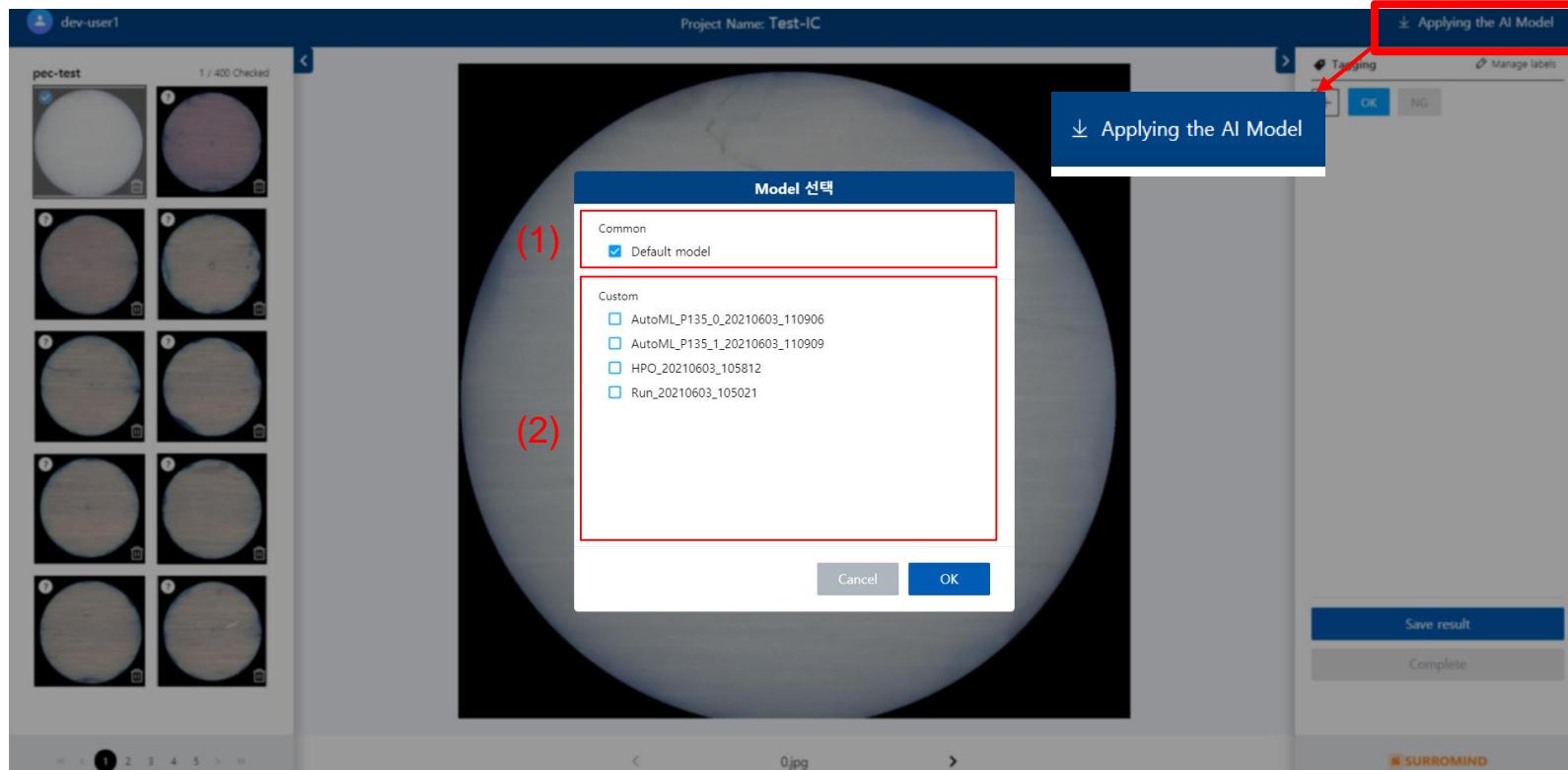


삭제 버튼을 클릭할 경우, 삭제 아이콘이 빨간색으로 표시되며 Complete 처리를 하기 전까진 물리적으로 삭제되지 않습니다.

6.5 Auto Annotation

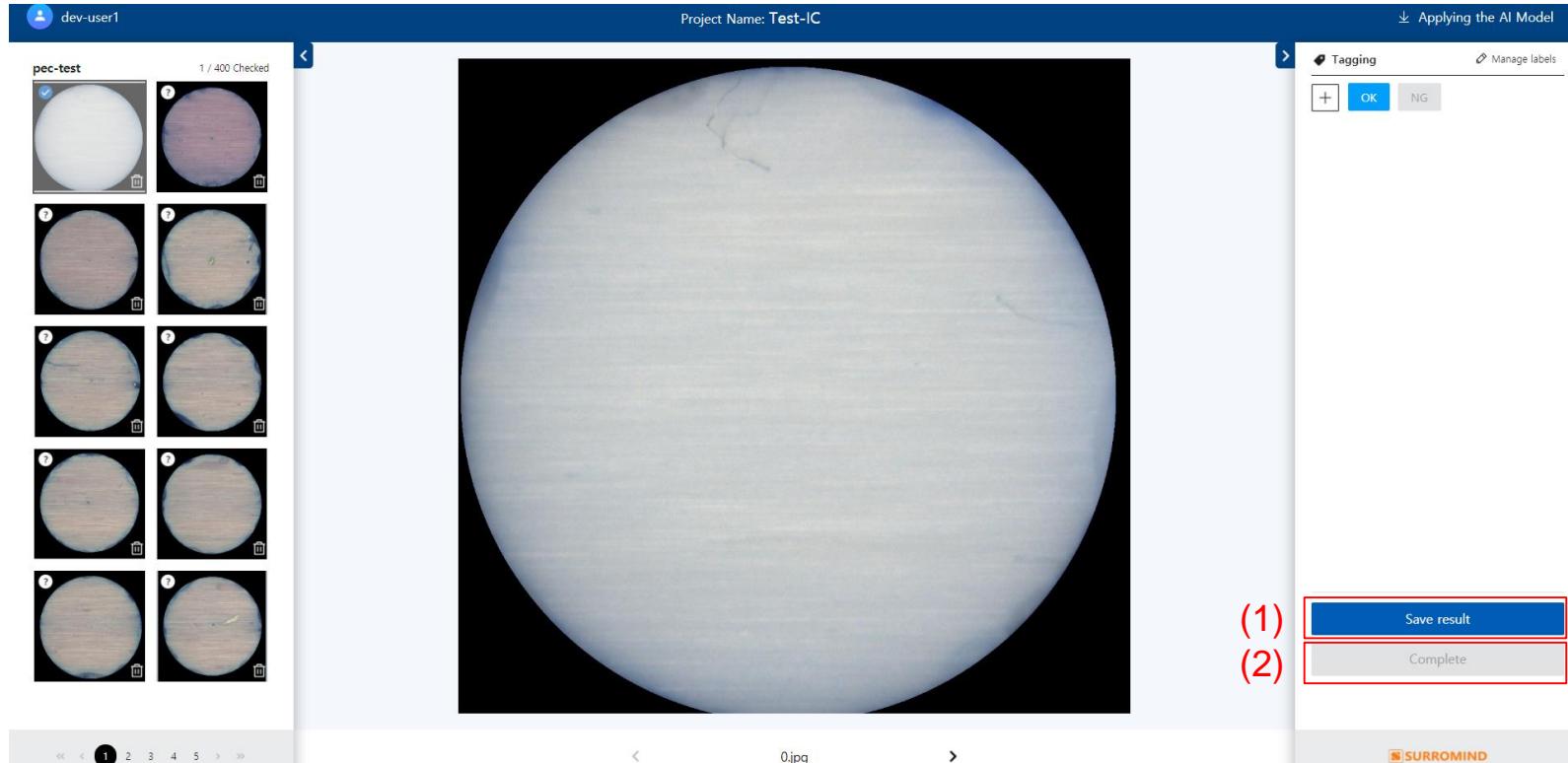
Applying the AI Model 버튼을 클릭하여 Auto Annotation을 진행하실 수 있습니다.

Default 모델(1)과 Custom 모델(2)을 선택하여 진행하실 수 있습니다. Custom 모델은 직접 학습시킨 모델이 있어야 사용 가능합니다.
Default 모델은 사용을 권장하지 않습니다.



6.6 작업 저장과 완료

작업을 저장하시려면 Save result 버튼(1), 작업을 완료하시려면 Complete 버튼(2)을 클릭해주시기 바랍니다.
Complete 처리는 개발자 계정만 가능합니다.



6.6 작업 저장과 완료

Complete 처리된 Annotation 일감은 Status가 ‘Completed’로 변경(1)되며, Data 화면에서도 Label이 자동으로 추가됩니다.

(1)

| Annotation | | | | | | | | |
|------------------------|----------------------------------|-------|-----------------------|-------|-------------|-----------|------------|------------|
| Data | | | | | | | | |
| Dataset Name(current) | 검색어를 입력해주세요. | Q | 나에게 할당된 일감 보기 | Days | Weeks | Months | 선택 | |
| pec-test* | Test-IC | image | Classification | 0-399 | ● Completed | dev-user1 | 2021-06-03 | 2021-06-03 |
| pecotek_0528_hylim_172 | test_hylim_0528 | image | Classification | 0-171 | ● Completed | dev-user1 | 2021-05-28 | 2021-05-28 |
| test888 | je-instance-segmentation-pytorch | image | Instance Segmentation | 0-1 | ● Completed | dev-user1 | 2021-05-28 | 2021-05-28 |
| test777 | je-instance-segmentation-pytorch | image | Instance Segmentation | 0-1 | ● Completed | dev-user1 | 2021-05-28 | 2021-05-28 |

(2)

| Data | | | | | |
|-----------|--------|-------|-----------------------|--------------|--------------|
| Private | Shared | 선택 | Dataset Name(current) | 검색어를 입력해주세요. | 선택 |
| Private | Shared | 선택 | pec-test* | 2 | image |
| pec-test* | 2 | image | 29.3831 MB | 2021-06-03 | (2) pec-test |

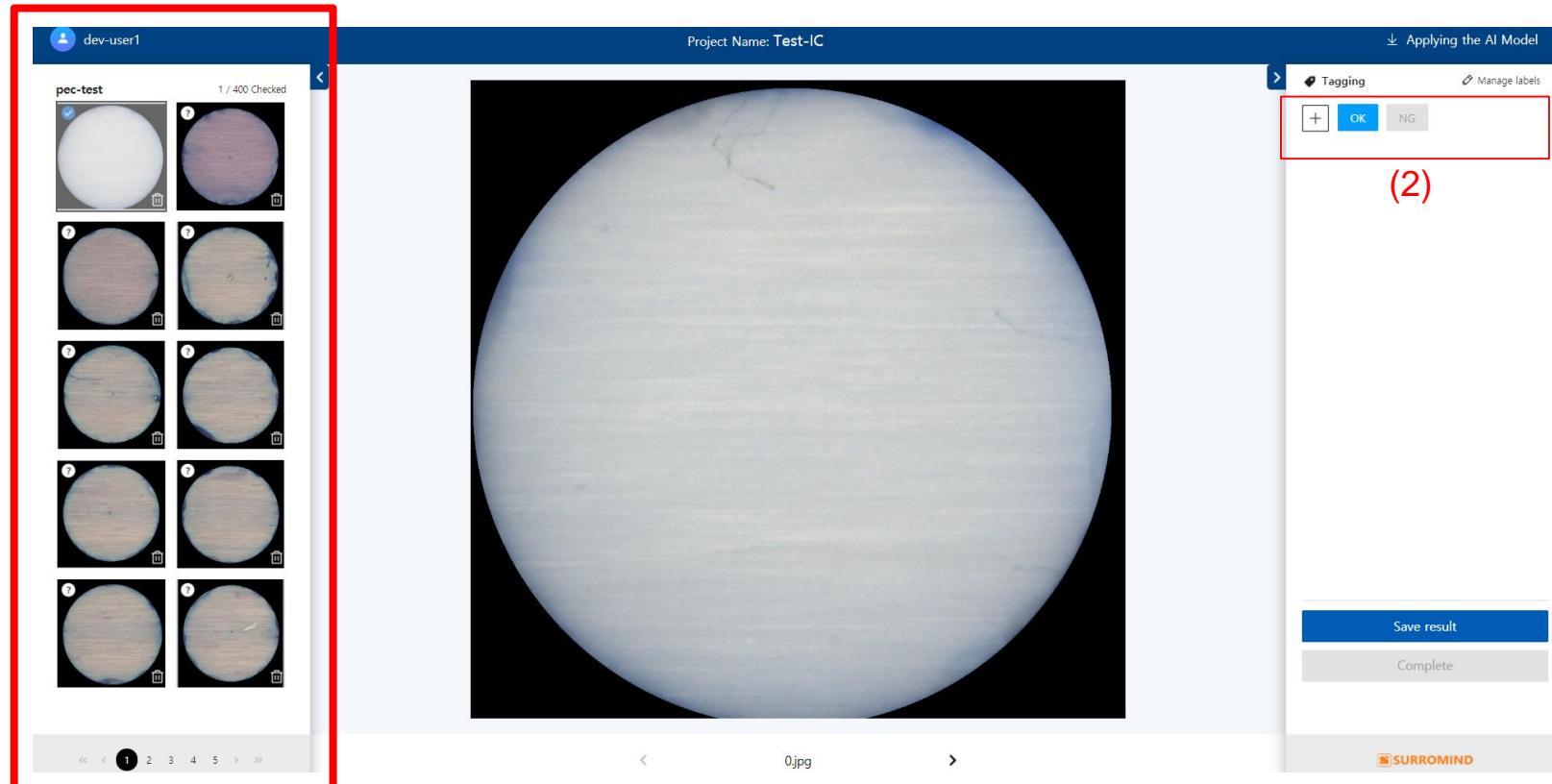
6.7 Image Classification

Image Classification에 적합한 Dataset은 아래와 같습니다

| 조건 | 예시 | 특징 |
|------------------|--------------------------------------------------------------------------------------------|----------------|
| 검출할 불량이 다양하지 않음 | A blue circle labeled "양품" (Good Product) and a blue triangle labeled "불량" (Defect). | 양품과 불량만 구별하면 됨 |
| 양품과 불량의 형상 차이가 큼 | A blue circle labeled "양품", a red circle labeled "불량1", and a blue triangle labeled "불량2". | |

6.7 Image Classification

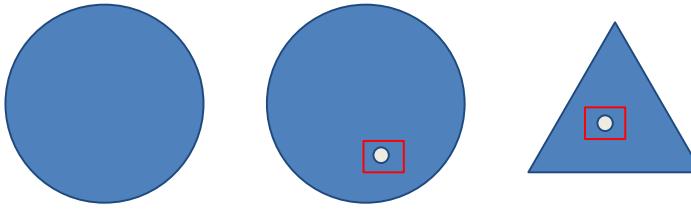
좌측에 있는 이미지(1)를 하나씩 확인 한 후 미리 지정한 Label을 선택(2)해줍니다.



(1)

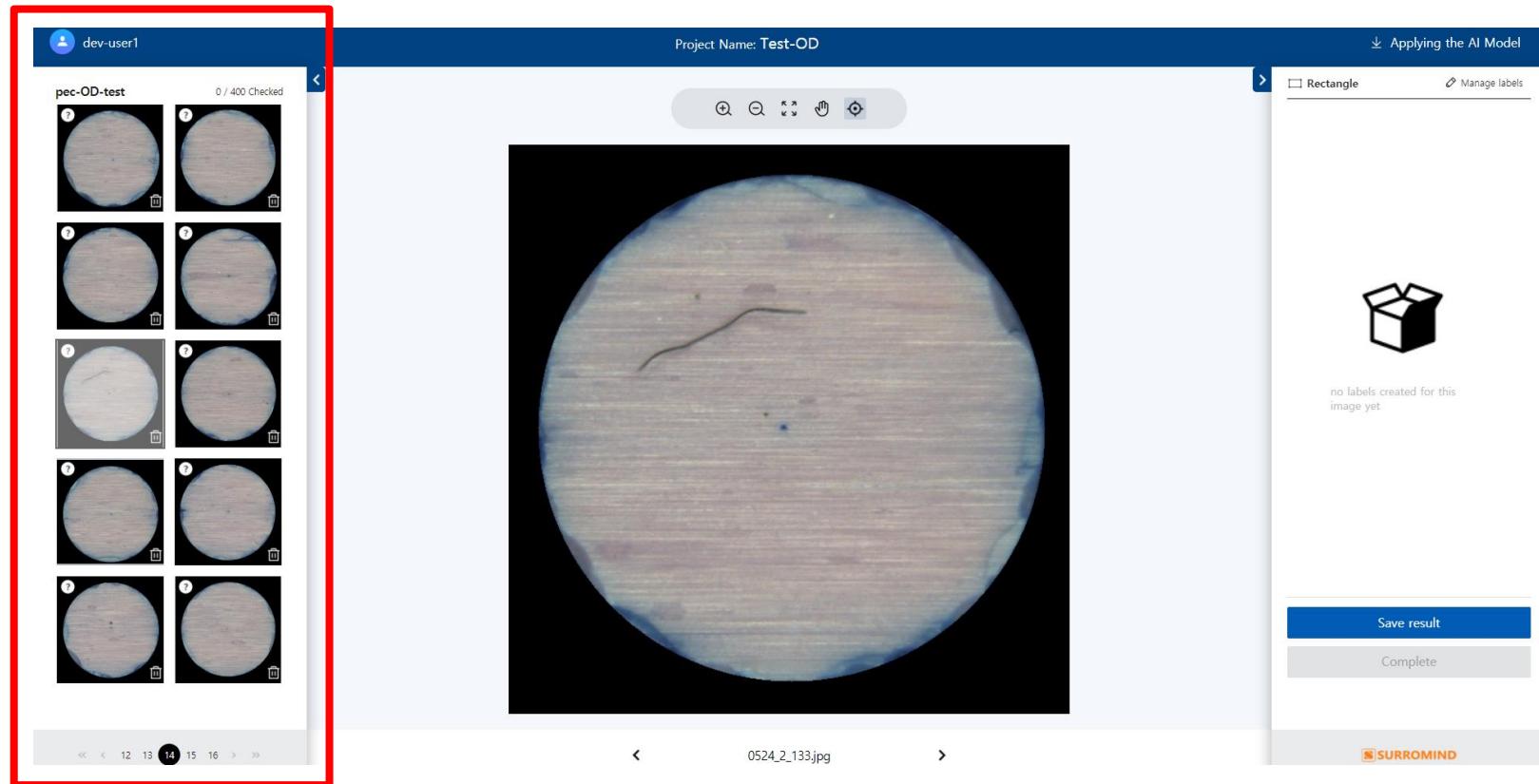
6.8 Object Detection

Object Detection에 적합한 Dataset은 아래와 같습니다.

| 조건 | 예시 | 특징 |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 복잡한 환경 속에서 특정 패턴을 찾아야 할 경우 (예: 물류 라인에서 상자 내 바코 드 영역 검출, OCR 검출, dent 검출) |  <p>양품 불량1 불량2</p> | 검출할 대상은 패턴이 일정하지만 그 외의 환경 이 복잡하고 다양함 |

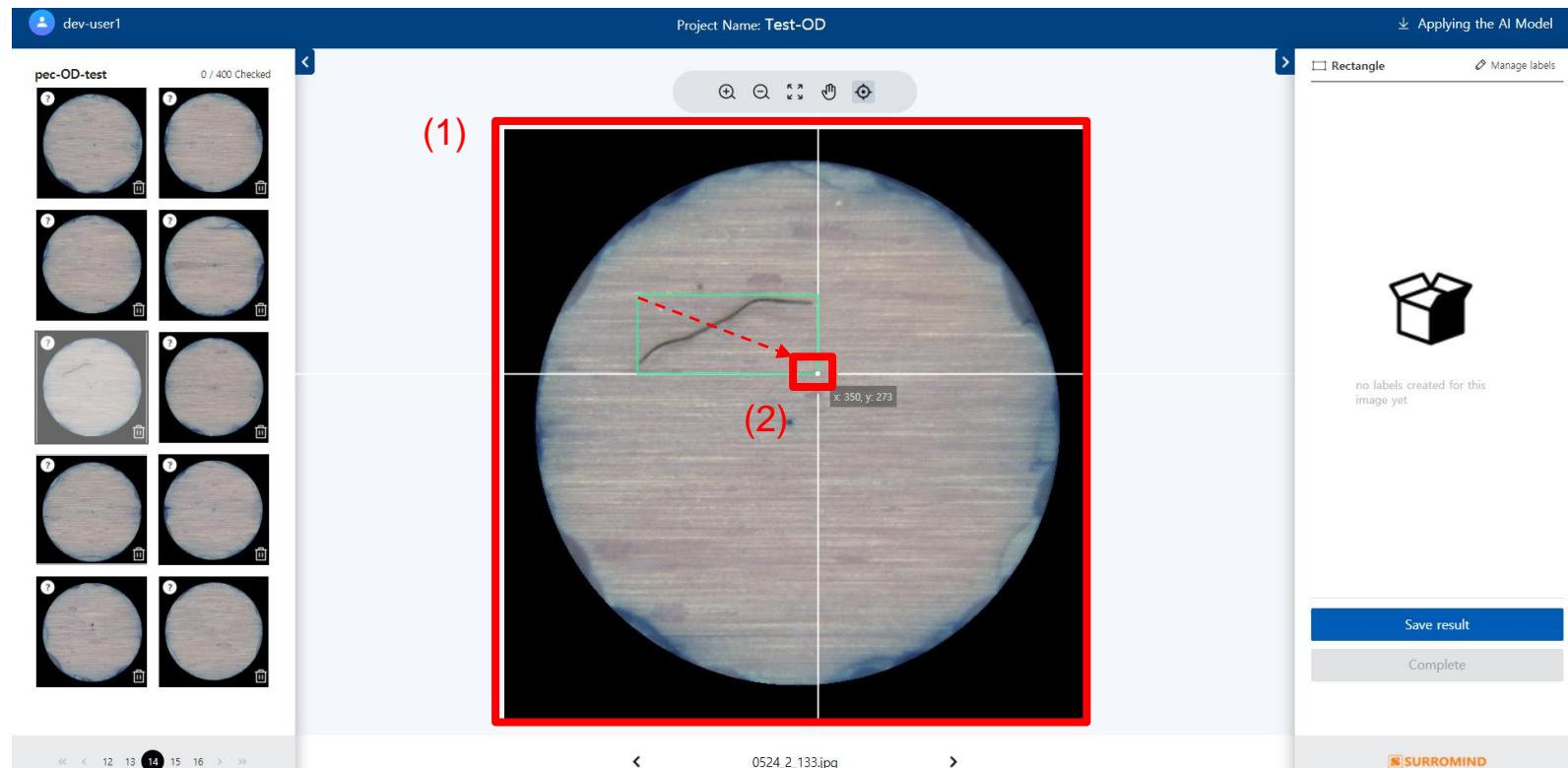
6.8 Object Detection

좌측에 있는 이미지를 하나씩 확인한 후 작업을 진행합니다.



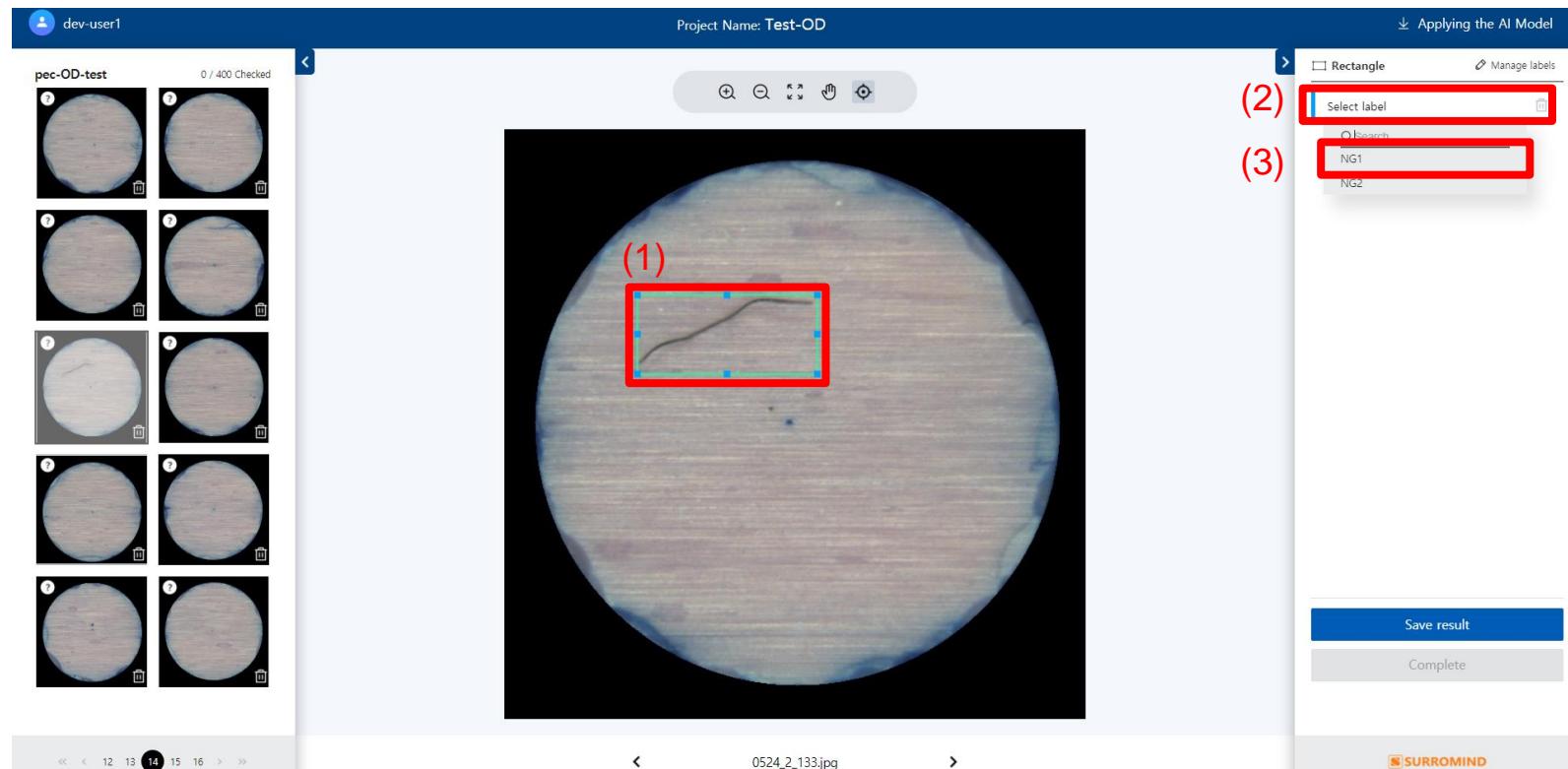
6.8 Object Detection

Image 영역(1) 내부에서 왼쪽 마우스 버튼을 누른 채 원하는 크기만큼 사선으로 Drag(2) 하여 Bounding Box를 생성 합니다.



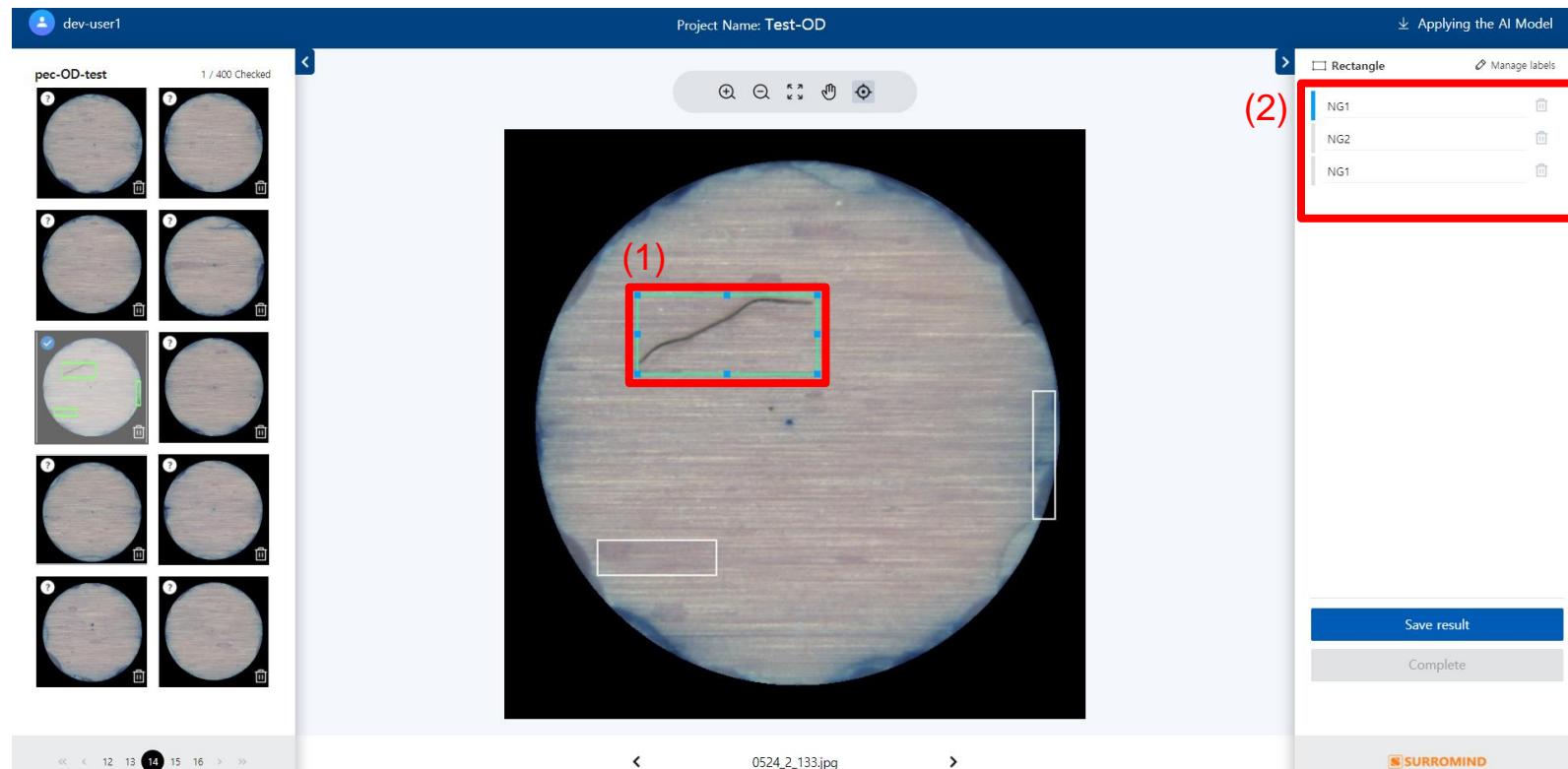
6.8 Object Detection

Bounding Box(1) 를 선택한 후 화면 우측 Select label(2) 을 클릭, 사전에 등록 한 Label(3)을 선택하여 label을 지정합니다.



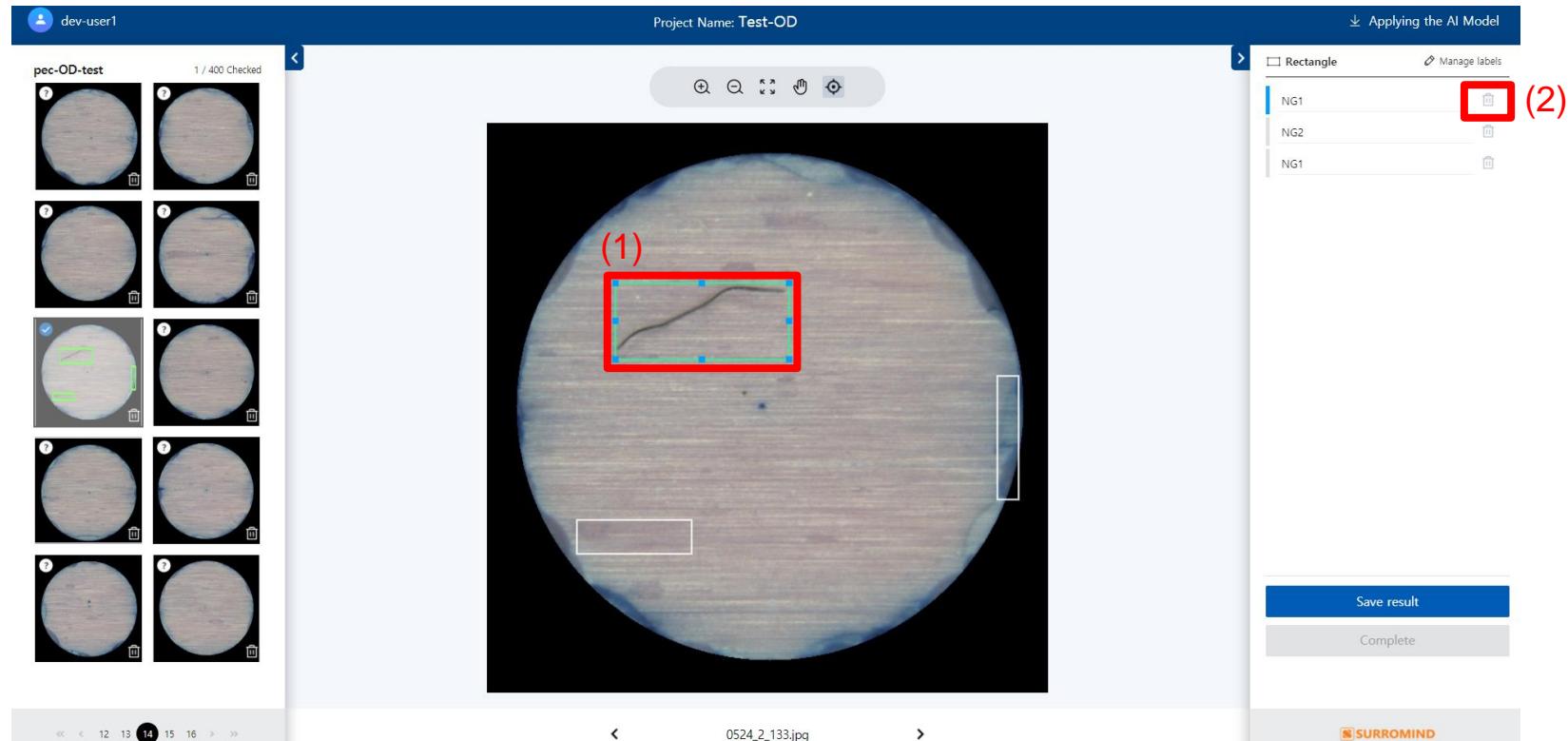
6.8 Object Detection

Bounding Box(1) 선택시 대응 되는 Label(2) 이 활성화 되고, Label(2) 선택시 대응 되는 Bounding Box(1)가 활성화 됩니다.



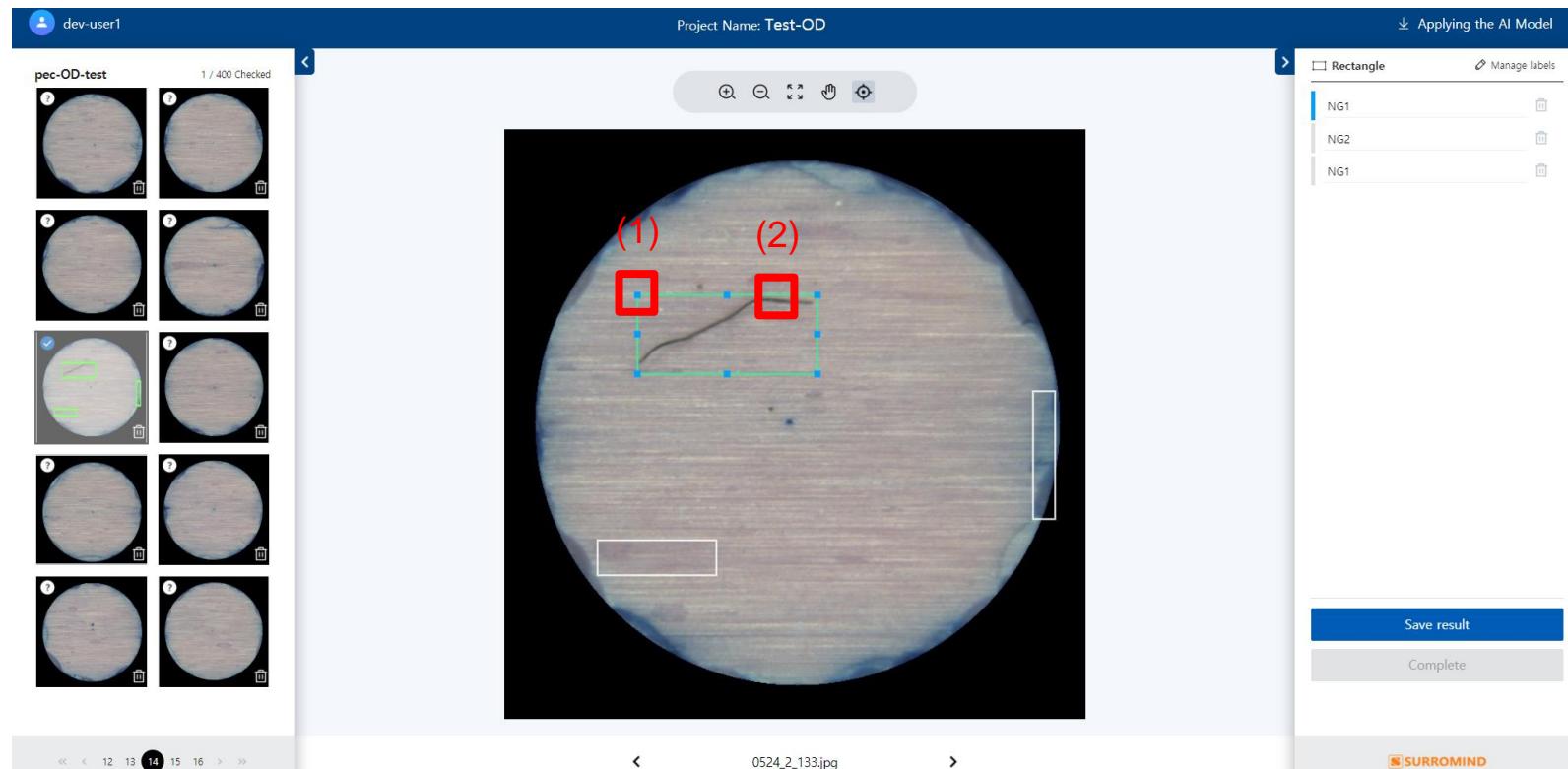
6.8 Object Detection

Bounding Box(1)의 경계를 선택 후 키보드의 Delete 키를 누르거나 Delete버튼(2)을 클릭하여, Bounding Box와 Label을 함께 삭제합니다.



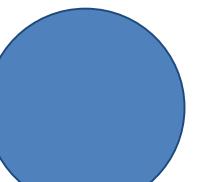
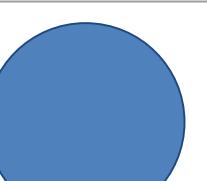
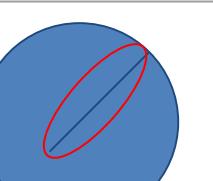
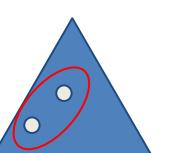
6.8 Object Detection

Bounding Box의 경계에서 파란색 점(1) 클릭 후 Drag시 크기 조절, 초록색 선(2) 클릭 후 Drag시 Bounding Box의 위치 이동이 가능합니다.



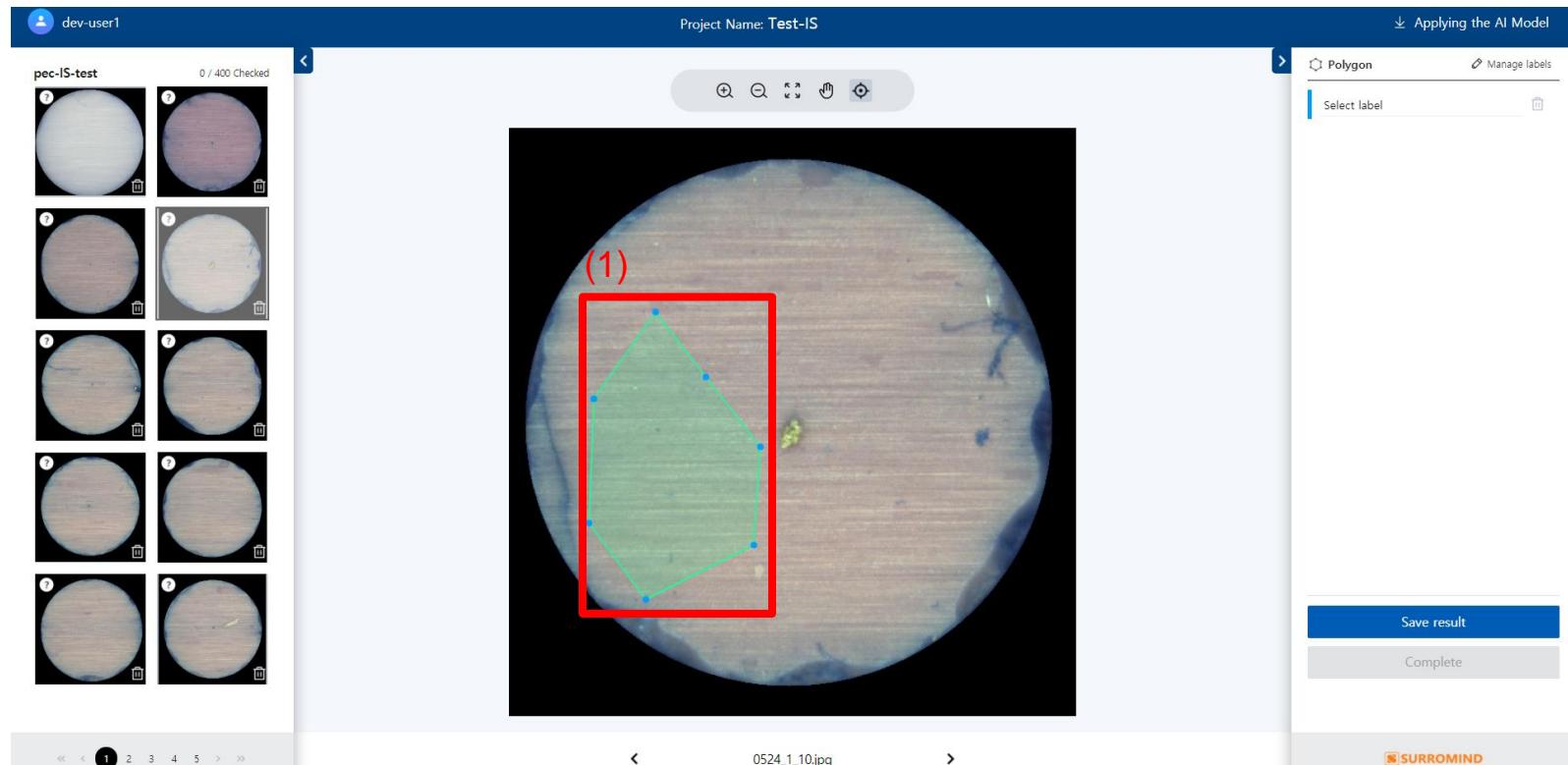
6.9 Instance Segmentation

Instance Segmentation에 적합한 Dataset은 아래와 같습니다.

| 조건 | 예시 | 특징 |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 양품 형상이 다양 |   | 형상이 다르지만 양품으로 판정해야 함 |
| 불량 유형이 다양 |    | 불량 유형이 다양하여 구분해주어야 함 |

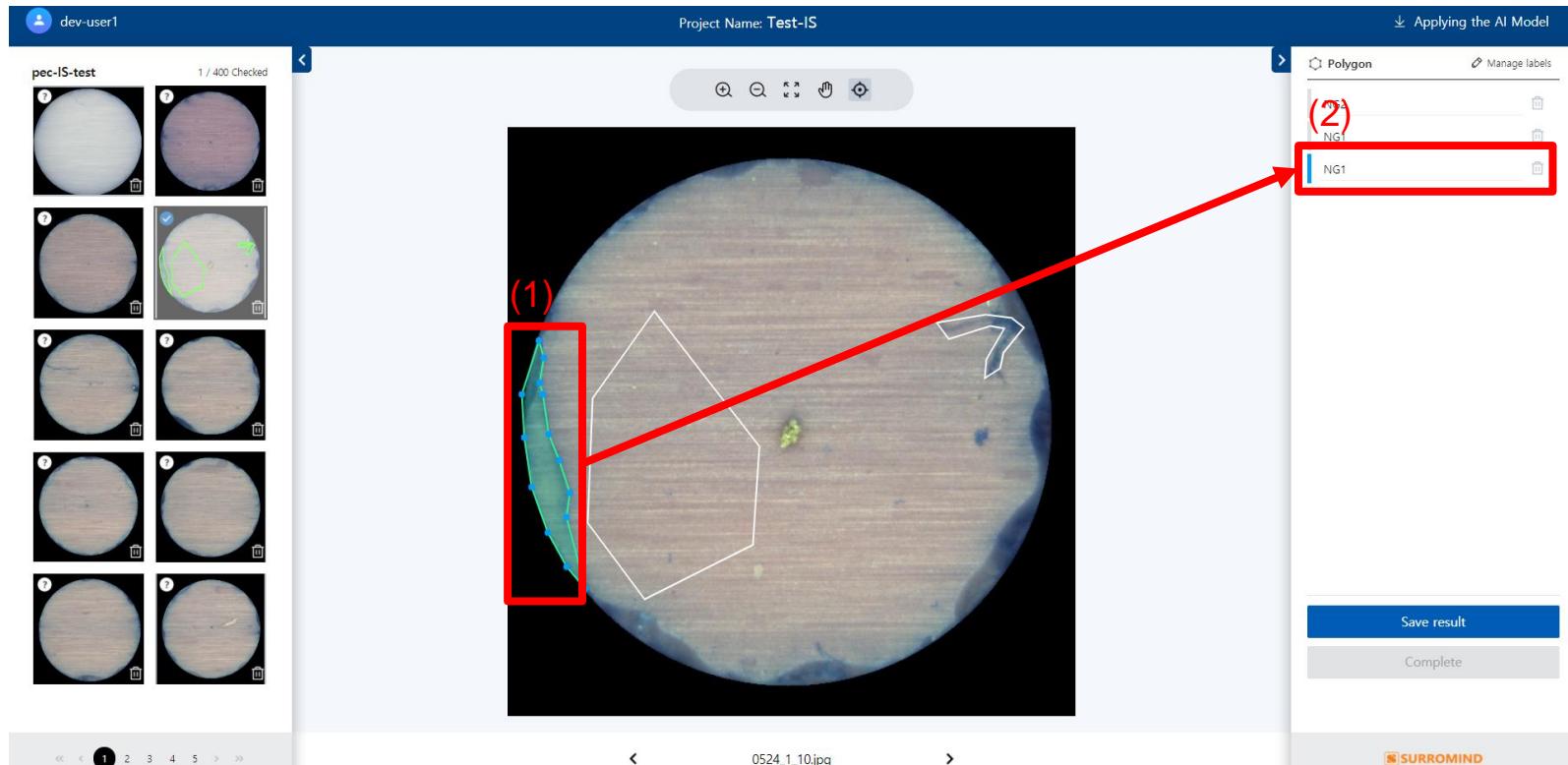
6.9 Instance Segmentation

마우스를 이용해, Label을 부여하고자 하는 영역의 경계점(1)을 표시합니다(경계점은 왼쪽 클릭으로 추가).



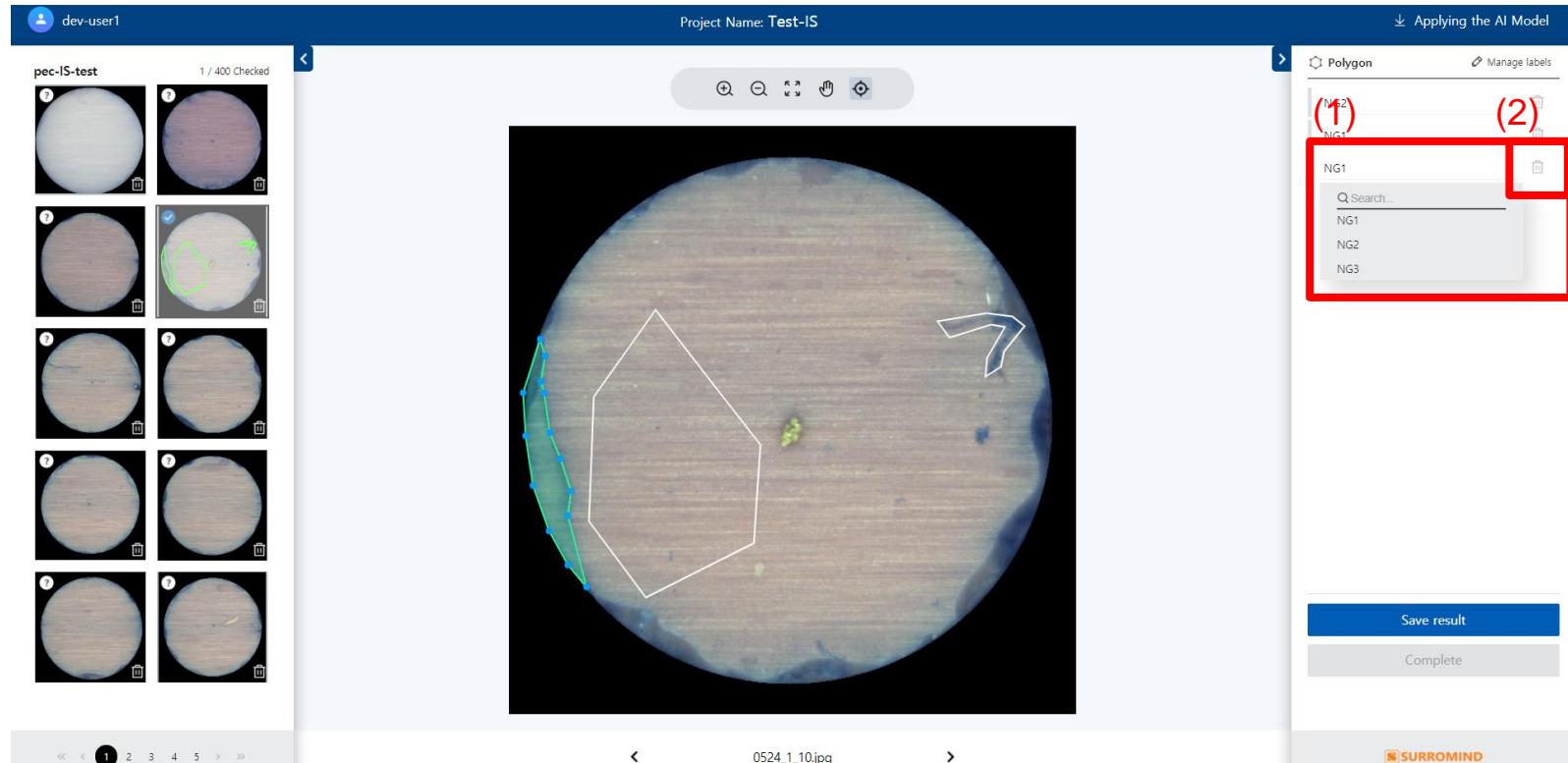
6.9 Instance Segmentation

시작점과 끝점이 맞닿으면, 영역(1)이 표시됩니다.
화면 우측에 있는 Polygon 목록에서 지정한 영역(2)을 항목으로 확인할 수 있습니다.



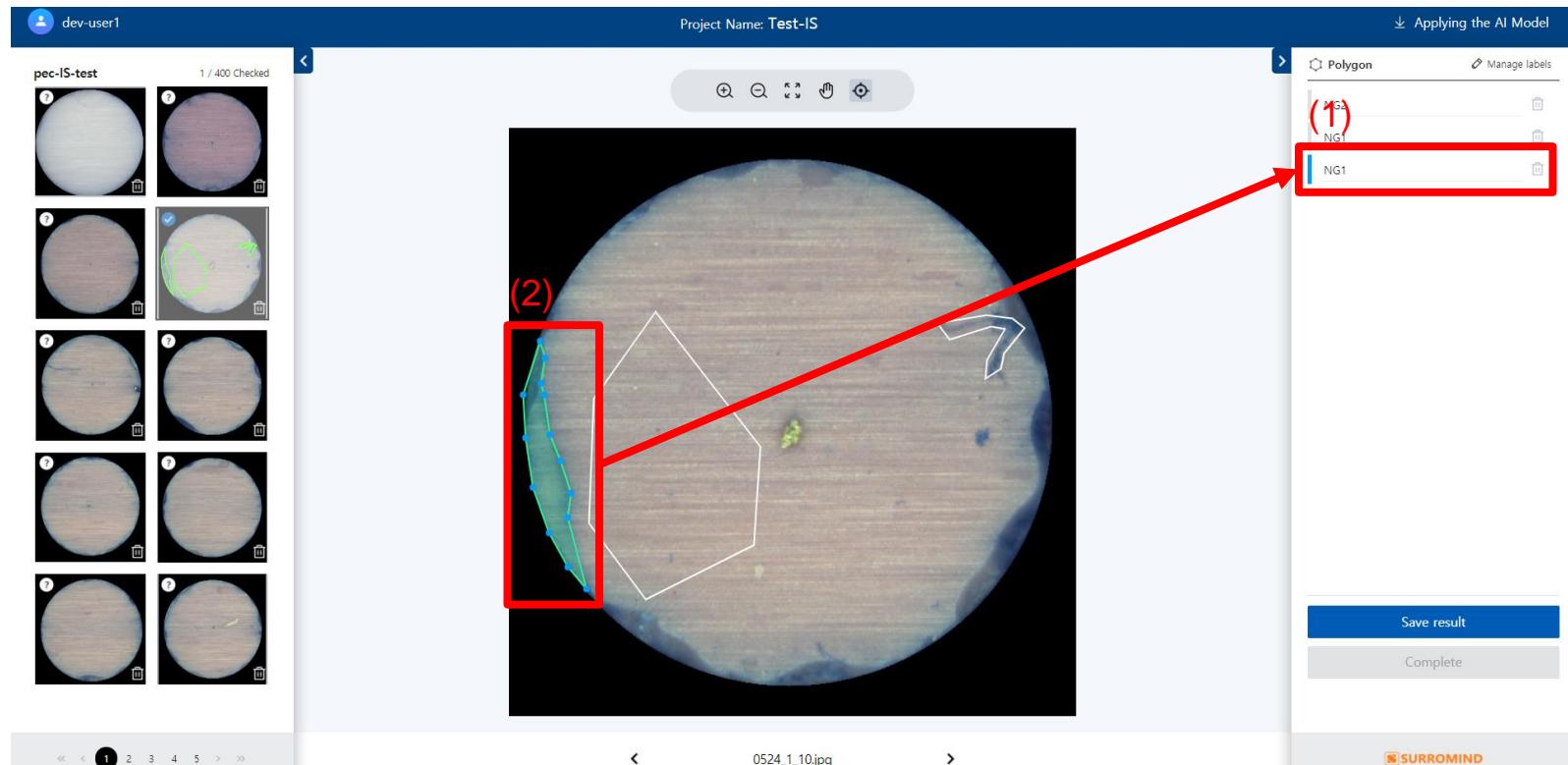
6.9 Instance Segmentation

우측 Polygon 목록에서 영역에 해당하는 항목(1)을 클릭하면, 그림과 같이 Label을 지정할 수 있습니다.
Label이 지정된 항목을 클릭하면 Label을 다시 지정할 수 있고, 항목 옆의 휴지통 버튼(2)을 누르면 영역이 삭제됩니다.



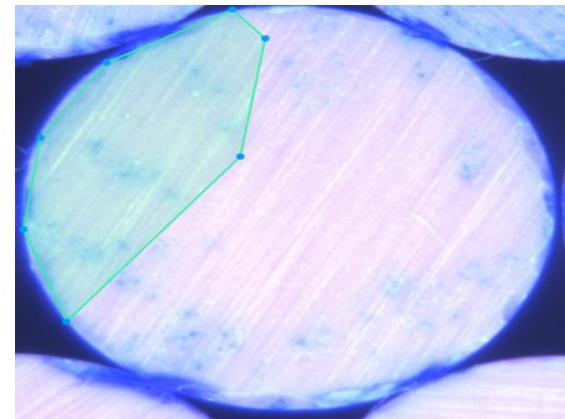
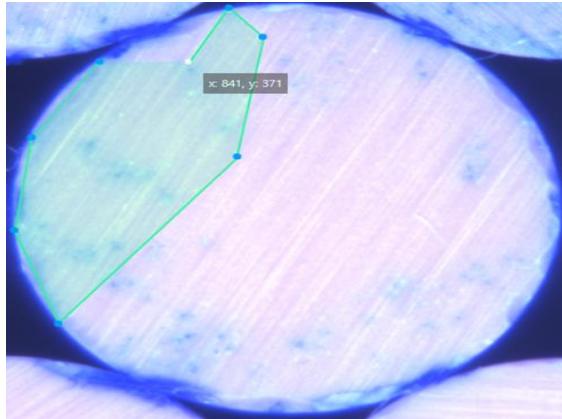
6.9 Instance Segmentation

오른쪽 폴리곤 목록에서 영역이 지정된 항목(1)을 클릭하면, 이미지에서 항목에 해당하는 영역(2)이 활성화됩니다.

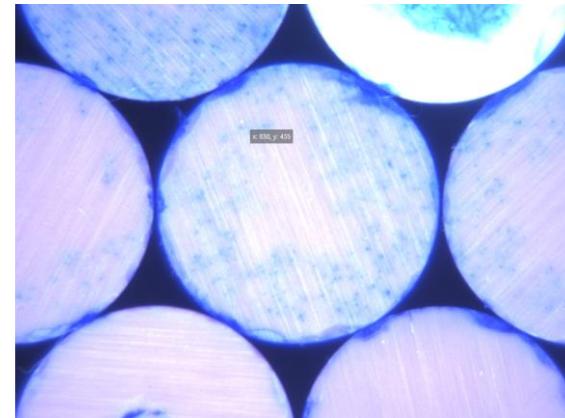
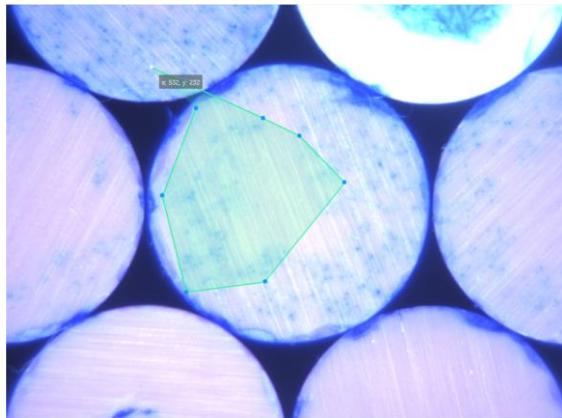


6.9 Instance Segmentation

경계점을 표시하는 도중 Enter키를 입력하면 경계점의 시작점과 끝점이 자동으로 연결됩니다.

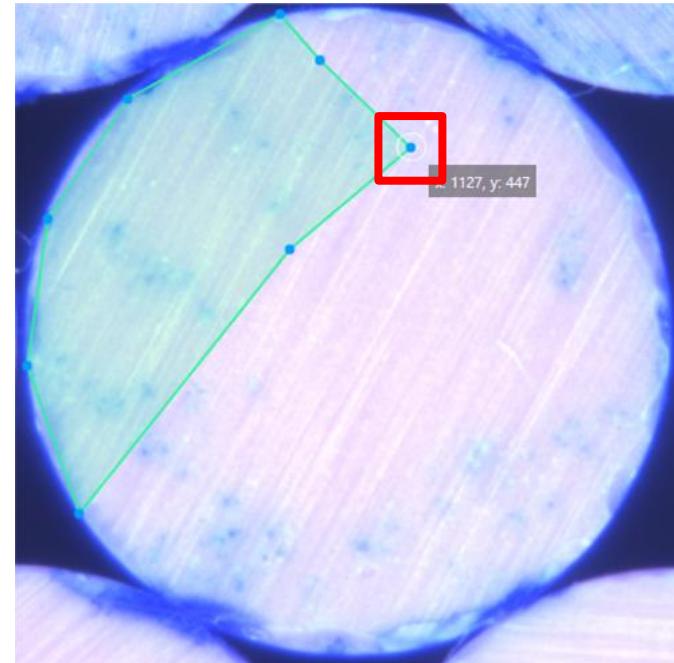
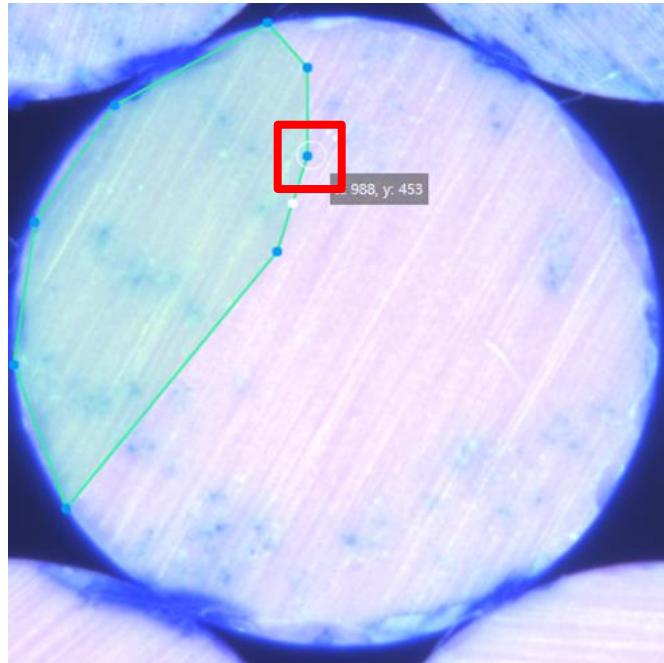


경계점을 표시하는 도중 ESC키를 누르면, 표시하던 영역이 사라집니다.



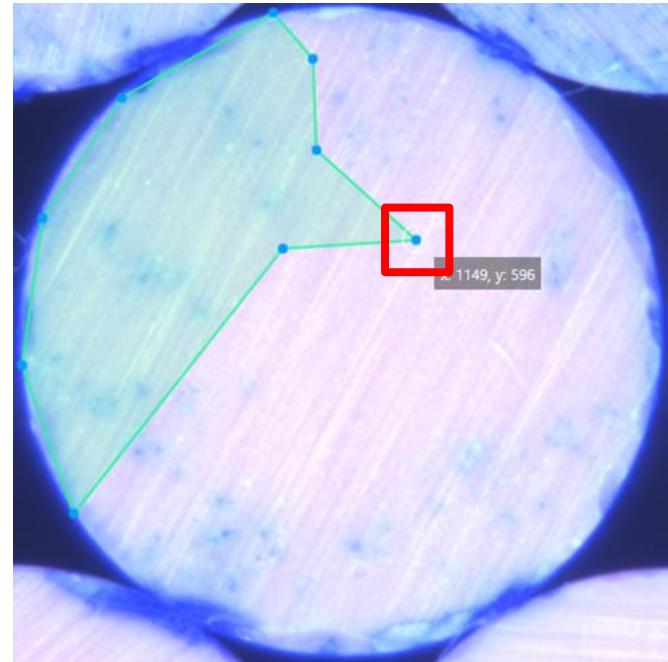
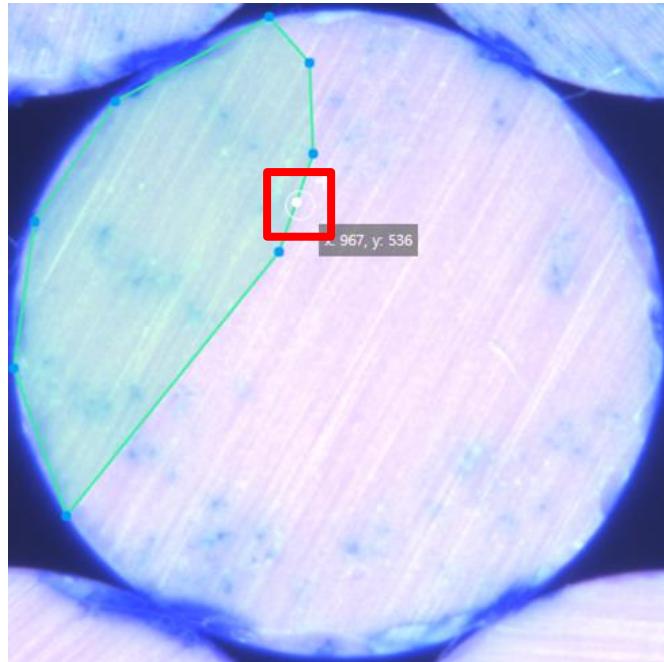
6.9 Instance Segmentation

경계점 표시가 완료된 영역의 경계점을 드래그하면 경계점을 변경할 수 있습니다.



6.9 Instance Segmentation

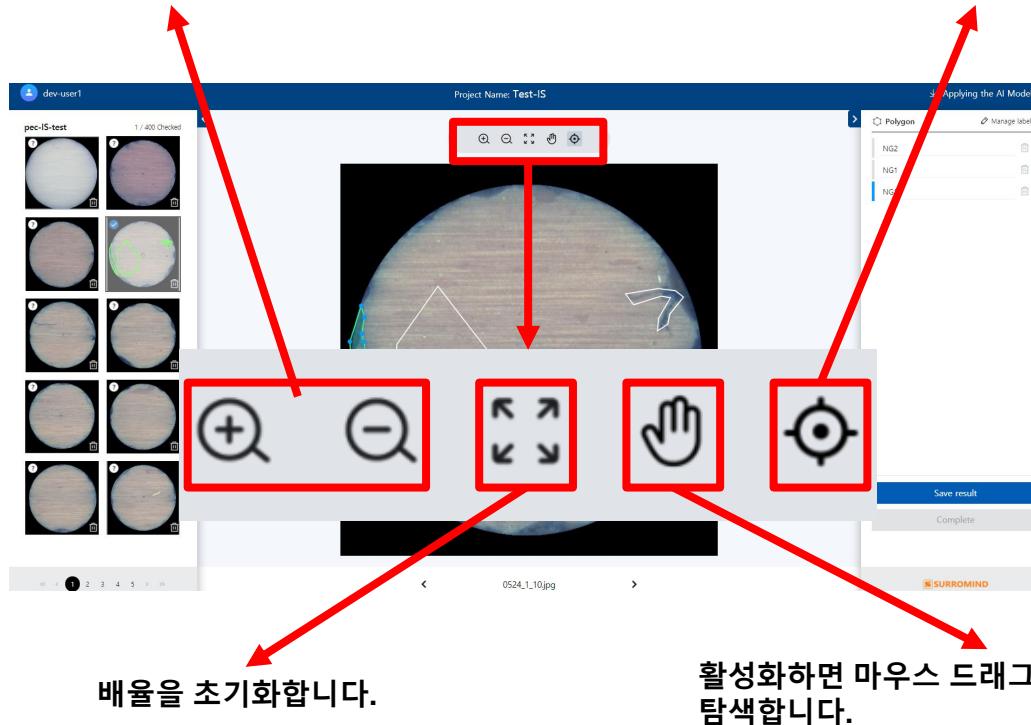
경계점과 경계점 사이에 새로운 경계점을 만들 수 있습니다.



6.9 Instance Segmentation

이미지의 배율을 조절할 수 있습니다.

포인터 주변 십자선 표시 여부를 설정할 수 있습니다.



배율을 초기화합니다.

활성화하면 마우스 드래그를 통해 이미지를 탐색합니다.