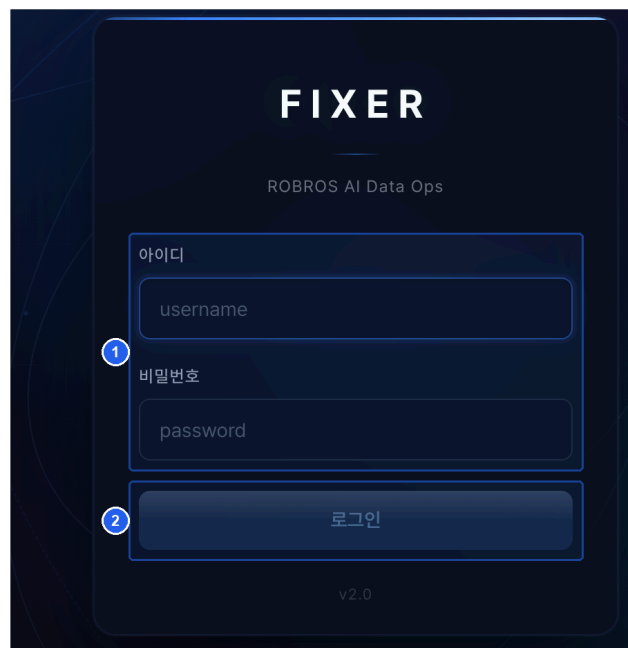


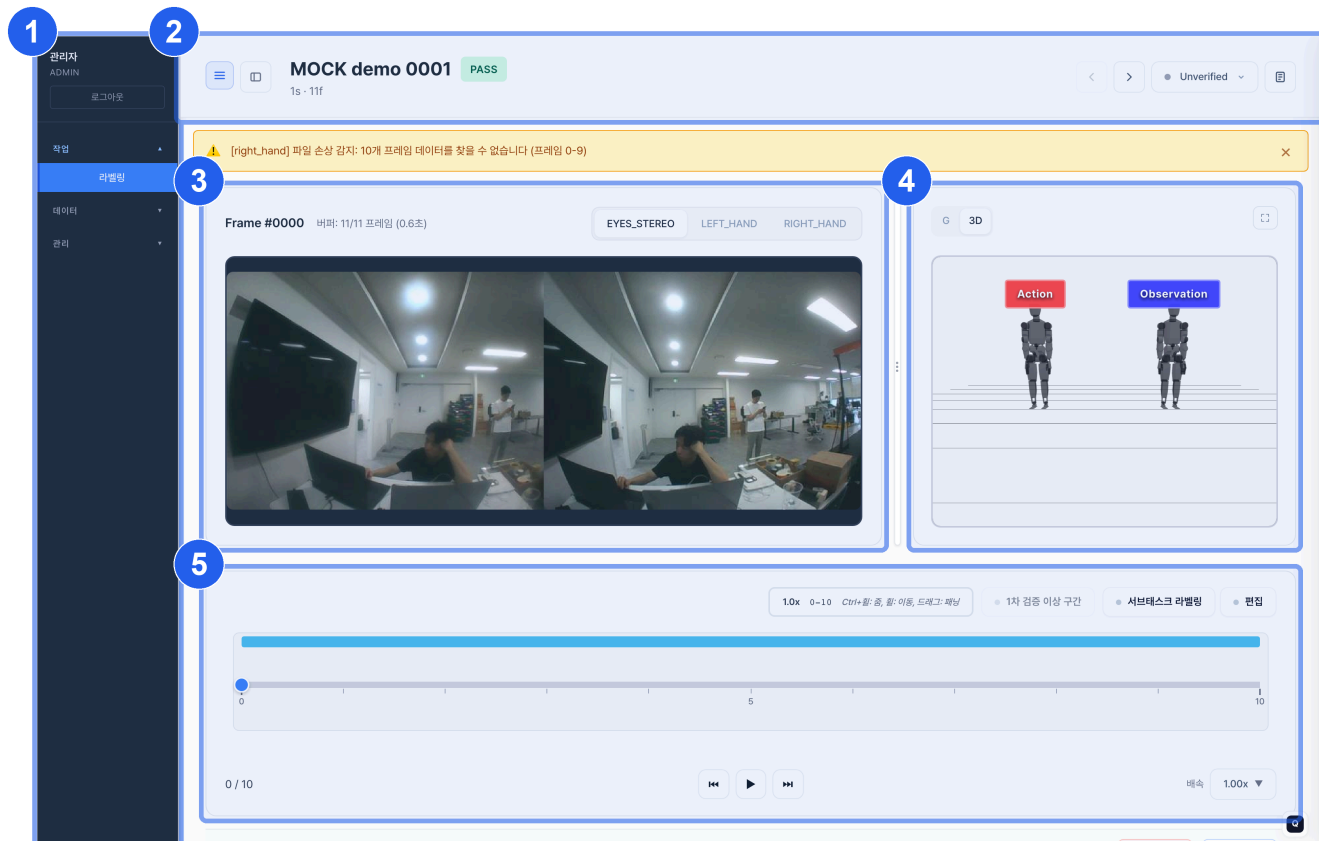
[Chapter 1] Creating a Fixer Project

1. Fixer Login and Project Creation

1. Enter `http://localhost:8000` in your web browser to navigate to **Fixer**.
2. Enter your ID and password and log in via the **[Login]** button
 - ID: admin
 - PW: admin1234



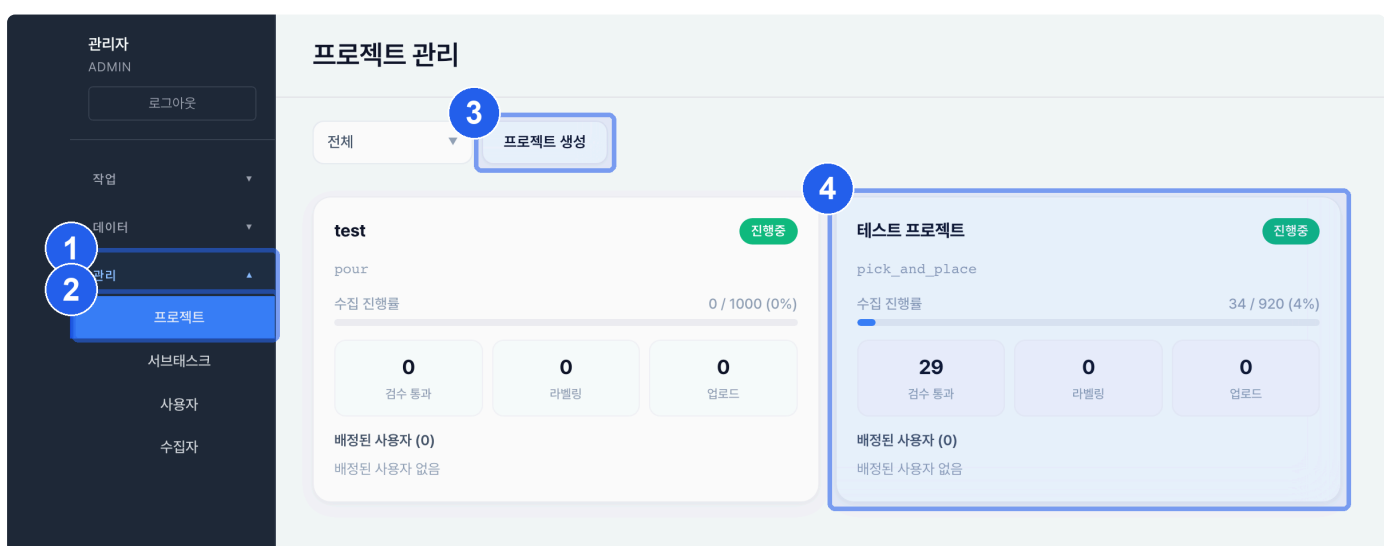
- ① Enter ID and password
- ② **[Login]** button



After logging in, the default screen is laid out as shown above.

- ① [Left sidebar]: Navigate to Work, Data, and Management menus
- ② [Top panel]: Episode name, auto-review status, previous/next navigation, data grade, metadata
- ③ [Video panel]: Recorded camera frames
- ④ [Visualization panel]: Graph View / 3D Motion View
- ⑤ [Timeline panel]: Playback controls, subtask labeling, editing

3. From the [Left sidebar], go to [Management] > [Projects].



- ① Sidebar path: [Management] > [Projects]
- ② [Projects]
- ③ [Create Project] button
- ④ [Project card] (created project)

4. Click the **[Create Project]** button.
5. Fill in the following information to create the project.

The screenshot shows a mobile app interface for creating a project. The form is titled '프로젝트 생성' (Project Creation). It contains five main input sections, each with a blue circle number indicating the step:

- 1** 프로젝트 이름 (Project Name): A text input field with the placeholder text '예: pick_and_place_v2'.
- 2** 메인 태스크 (Main Task): A dropdown menu showing 'pick_and_place'.
- 3** 서브태스크 선택 (Subtask Selection): Includes two buttons '전체 선택' (Select All) and '전체 해제' (Deselect All), a progress indicator '0/1', and a radio button selection for 'hhh'.
- 4** 목표 에피소드 수 (Target Episode Count): A text input field containing the number '1000'.
- 5** 설명 (선택) (Description (Optional)): A large text area for additional description.

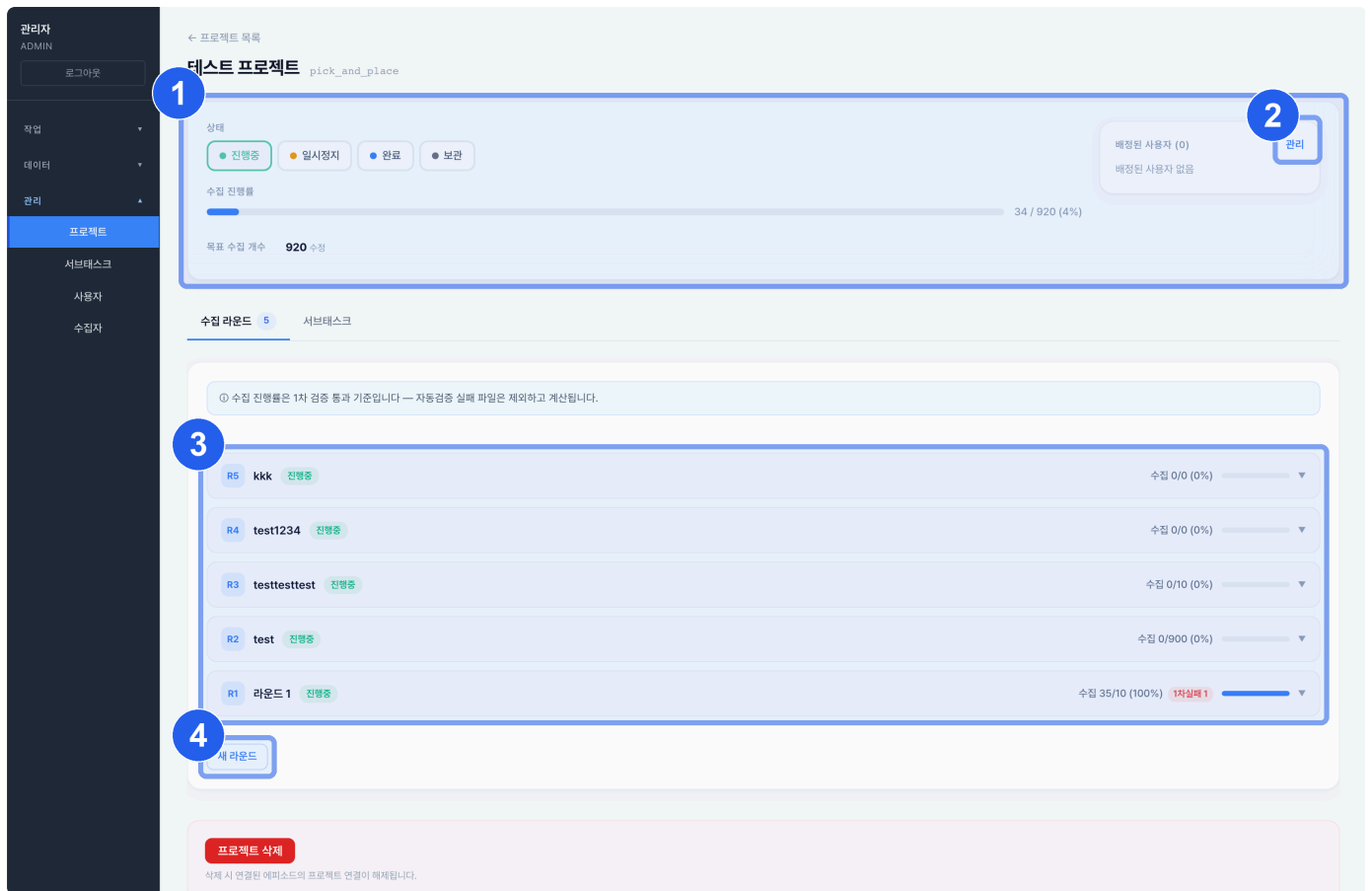
At the bottom right of the form are two buttons: '취소' (Cancel) and '생성' (Create).

- ① Project name: Enter the name of the project to create.
- ② Main task: Select the project's main task.
- ③ Subtask: Select the subtask of the data to be collected.
- ④ Target episode count: Enter the target number of episodes.
- ⑤ Description (optional): If needed, write an additional description of the project.

6. Click the **[Create]** button.
7. A **[Project card]** will be created on the project screen.

2. Assigning Collectors

1. Click the newly created **[Project card]** to navigate to the project detail page.



- ① Status, collection progress
- ② **[Manage]** button (assign collectors)
- ③ List of collection rounds
- ④ **[New Round]** button (opens round creation modal)

2. Click the **[Manage]** button on the right to select the users who can collect data for this project.

3. Creating a Round

라운드 생성

테스트 프로젝트 / 새 라운드 · 직전 Round 5

닫기

1 라운드 이름
kkk
→ 테스트 프로젝트_kkk_YYMMDD_NNNN.hdf5

2 목표 수집
- 0 + 개
Round 6

3 사용자 정의 속성 이 라운드에서 달라지는 값
아직 사용자 정의 속성이 없습니다. 아래에서 추가하세요.
새 사용자 정의 속성 이름 (예: 무게) 값 (예: 1.2) 추가

4 취소 라운드 생성

미리보기

ROUND 6
kkk
목표 0개
사용자 정의 속성 없음
직전 Round 5 과 동일 — 변경점 없음

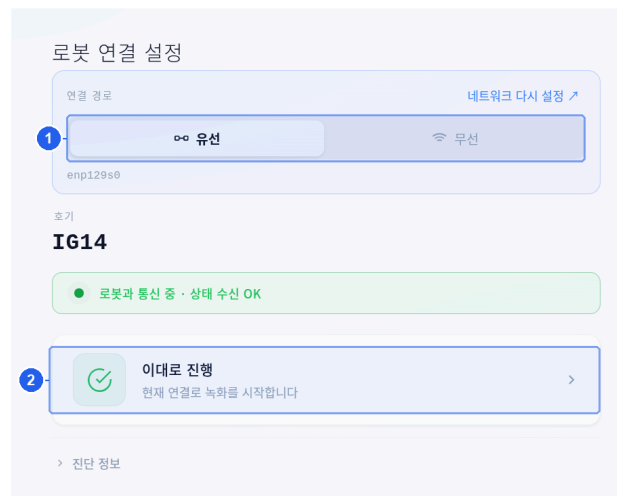
- ① Round name
- ② Target collection count
- ③ Custom attributes
- ④ **[Create Round]** button

1. Click the New Round button to open the **[Create Round]** modal.
2. Enter the round name.
3. Set the target collection count for this round.
4. Add **[Custom attributes]** if needed.
 - By pre-defining multiple selectable values under **[Custom attributes]**, you can select a desired value during data recording to record metadata on the episode.
5. Click **[Create Round]** to create the round.

[Chapter 2] Preparing and Performing Recording with Recorder

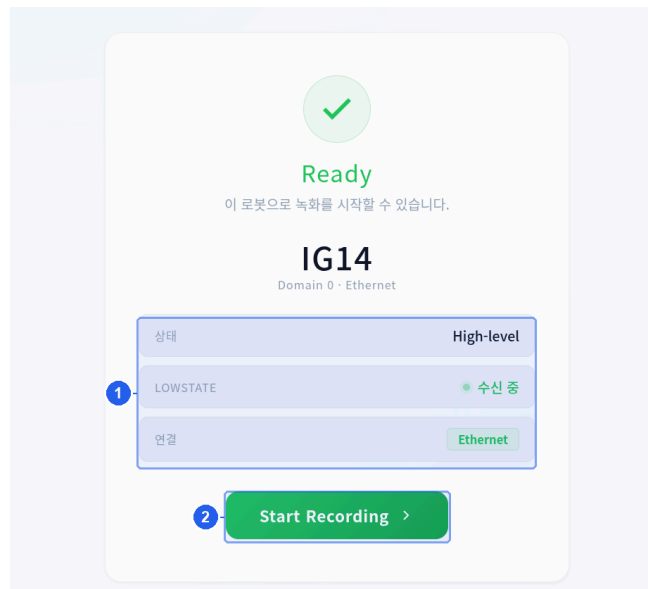
1. Preparing for Data Collection and Connecting the Recorder

1. Connect the computer running **IGRIS-C** and the **Recorder** via a wired LAN connection.
2. Navigate to <http://localhost:3001> in a web browser to access the **Recorder**.
3. Enter the ID and password to log in.
 - ID: admin
 - PW: admin1234
4. Log in to proceed to the robot connection settings page.
 - Wireless support is planned for a future release.



- ① Connection path (wired/wireless selection)
- ② Proceed as-is (start recording with the current connection)

4. If the status is normal, the **[Proceed as-is]** button will be enabled — click it to move to the next page.
5. Click **[Start Recording]** to navigate to the recording page.



- ① Robot ready status
- ② Start Recording button

2. Overview of Recording Page Key Features

The screenshot displays the IGRIS Recorder interface. At the top, it shows 'IGRIS Recorder' with a green '연결됨' (Connected) status. The main area is split into two video feeds: a dark, low-light view on the left and a bright, well-lit view on the right labeled 'Eyes Stereo' with a '31 Hz' refresh rate. Below the videos, a control bar includes 'IDLE', 'Select project...', 'EPISODE #0035', and a '녹화 시작' (Start Recording) button. A 'TIME' display shows '00:00', 'FRAMES' shows '0', and 'SIZE' shows '0 KB'. A 'ROUND' section prompts to '프로젝트를 먼저 선택하세요' (Select project first) and shows a file path. A '녹화 준비 상태' (Recording Ready Status) section indicates 'Not Ready' with a red dot and a '녹화 준비 상태 확인' (Check Recording Ready Status) button. Below this, a '상태' (Status) section shows system and robot health. The 'SYSTEM - 처리 작업' (System - Processing Task) section lists '실시간 녹화' (Real-time Recording), '파일 저장' (File Saving), '카메라 미리보기' (Camera Preview), '서버 업로드' (Server Upload), and '패달 제어' (Pedal Control), all with green status indicators. The '로봇' (Robot) section lists 'E-Stop', 'BMS', '토크' (Torque), and '모터 이상' (Motor Abnormality), with green status indicators. The 'DDS 토픽' (DDS Topics) section shows a table of topics, rates, and ages. The '업로드' (Upload) section shows 'Fixer' and 'Worker OK' status. A '0' counter is displayed. The bottom section shows 'All' and 'DDS' tabs, with a log entry: '13:55:14 DDS INFO DDS 스트리밍 상태 ? -> healthy'.

IGRIS Recorder ● 연결됨

DDS ● 29%

관리자 ↗ 나가기

● IDLE Select project... EPISODE #0035 ● 녹화 시작

TIME 00:00 FRAMES 0 SIZE 0 KB

ROUND 프로젝트를 먼저 선택하세요 FILE project_task_260709141047_0035.hdf5

녹화 준비 상태 ● Not Ready

녹화 준비 상태 확인

로봇-센서-저장소 상태를 점검합니다

상태

SYSTEM - 처리 작업

- 실시간 녹화 ● 대기
- 파일 저장 ● 대기
- 카메라 미리보기 ● 정상
- 서버 업로드 ● 정상
- 패달 제어 ● 정상

로봇

- E-Stop ● 해제
- BMS ● BMS_INITIALIZED
- 토크 ● ON
- 모터 이상 ● 없음

DDS 토픽

TOPIC	RATE	AGE
선택 토픽		
● igris_c_IG14/rt/bmsstate	2 Hz	0.3s
카메라		
● igris_c/sensor/eyes_stereo	28.7 fps	0.0s
● igris_c/sensor/left_hand	30.7 fps	0.0s
코어 - 상태		
● igris_c_IG14/rt/lowstate	503 Hz	0.0s
● igris_c_IG14/rt/lowcmd	- 수신 없음	
● igris_c_IG14/rt/handstate	10 Hz	0.1s
● igris_c_IG14/rt/handcmd	- 수신 없음	
● igris_c_IG14/rt/robotstate	10 Hz	수신 중

업로드 ● Fixer ● Worker OK

● Worker OK PID 41 hb 0.8s

0 대기

0 업로드 중

15 완료

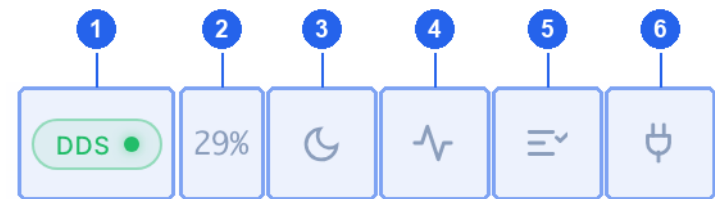
0 상태

All DDS

13:55:14 DDS INFO DDS 스트리밍 상태 ? -> healthy

작업 보통 크기 1

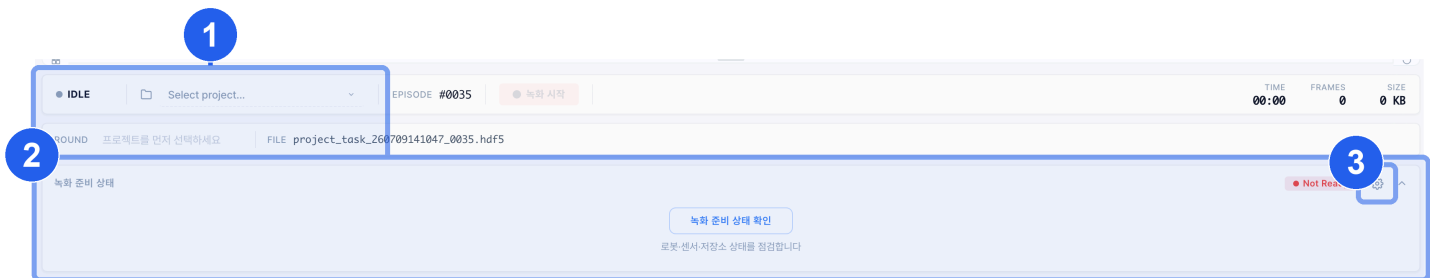
1. Header Component



- ① DDS connection status: Check the current DDS connection status.
- ② Battery level: Check the battery level of the IG-C.
- ③ Light mode / dark mode: Switch between light mode and dark mode.
- ④ DDS diagnostics: View topics and samples available for subscription on the currently used network, and check each topic's message type.

- ⑤ Recording topic selection: Select the topics you want to record.
- ⑥ Pedal settings: Configure the device connection for pedal use.

2. Middle Panel



- ① **[Project]** and **[Round]** selection: Select the project and round to collect data for, and choose one of the configured custom attributes.
- ② **[Recording readiness check]**: A procedure to verify that all data required for recording is ready.
- ③ **[Settings]** button: Toggle which items are checked as part of the recording readiness check.

3. Bottom Panel



- ① **[Status panel]**: Check the current status of topics and the robot.
- ② **[Upload panel]**: Check the upload progress of saved episodes to **Fixer**.
- ③ **[Log panel]**: Check real-time logs to verify that pedal signals and topic data are being received normally.

3. Data Collection and Recording Procedure

1. Perform data collection and recording on the recording page.
2. Click **[Recording topic selection]** in the header component and select the topics to record in the modal.

- By default, **lowstate** and **handstate** are selected.
- If there are additional topics you want to record, you can add them via **[Add]**.



- ① Topics available to add
- ② Recording targets
- ③ Storage location, data classification (Metadata, Observation, Action)

3. Selected topics can be checked under **[Recording targets]** on the right, where you select the data classification for each topic.

- Storage location: Select which group within the HDF5 file the selected topic will be classified and saved under.
 - Metadata: A group describing the characteristics of the collected data or experimental conditions.
 - Observation: A group of robot sensor data.
 - Action: A group of control command data.

4. Select the project and round for the episode to be recorded.

5. Click **[Recording readiness check]** to verify that the required values needed to proceed with recording are functioning normally.

6. Use the pedal to start and stop data recording.

- Start/stop recording: Press the pedal's center button to start; press it again to stop.
- Cancel recording: Press the pedal's left button to cancel the recording.

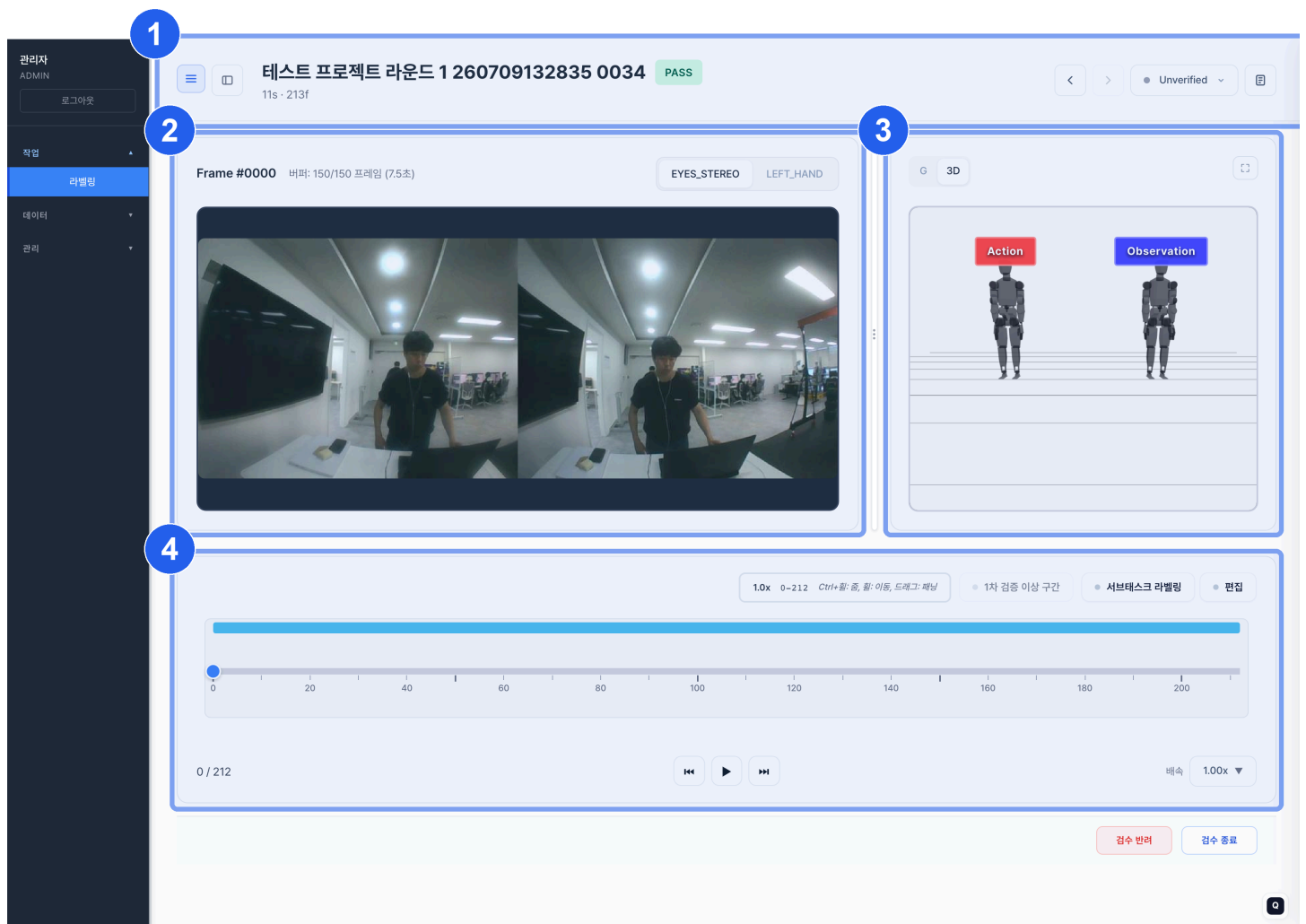
7. Successfully saved data is automatically uploaded to **Fixer**, and the entire progress can be monitored in real time in the upload panel.
8. If recording ends abnormally, a notification modal will be displayed and that recording will be canceled.

[Chapter 3] Fixer Episode Automatic and Manual Review

1. Automatic and Manual Episode Review

1. Recorded episodes go through automatic review first, after which manual review and subtask labeling are performed on the labeling page.
 - Automatic review: A step that runs automated checks to verify whether the episode meets the selected criteria.
2. From the [Left sidebar], go to [Work] > [Labeling].

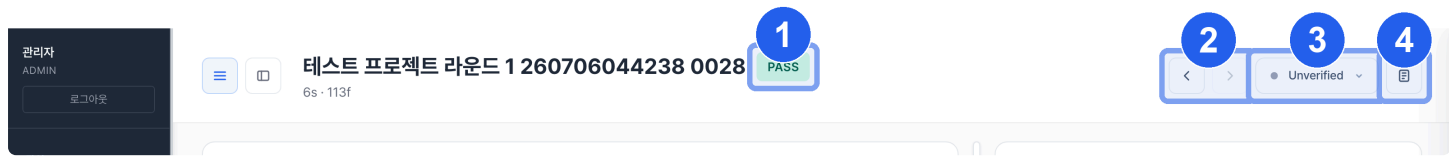
2. Overview of Key Labeling Page Components



- ① Header
- ② Frame panel

- ③ Data visualization view
- ④ Timeline panel

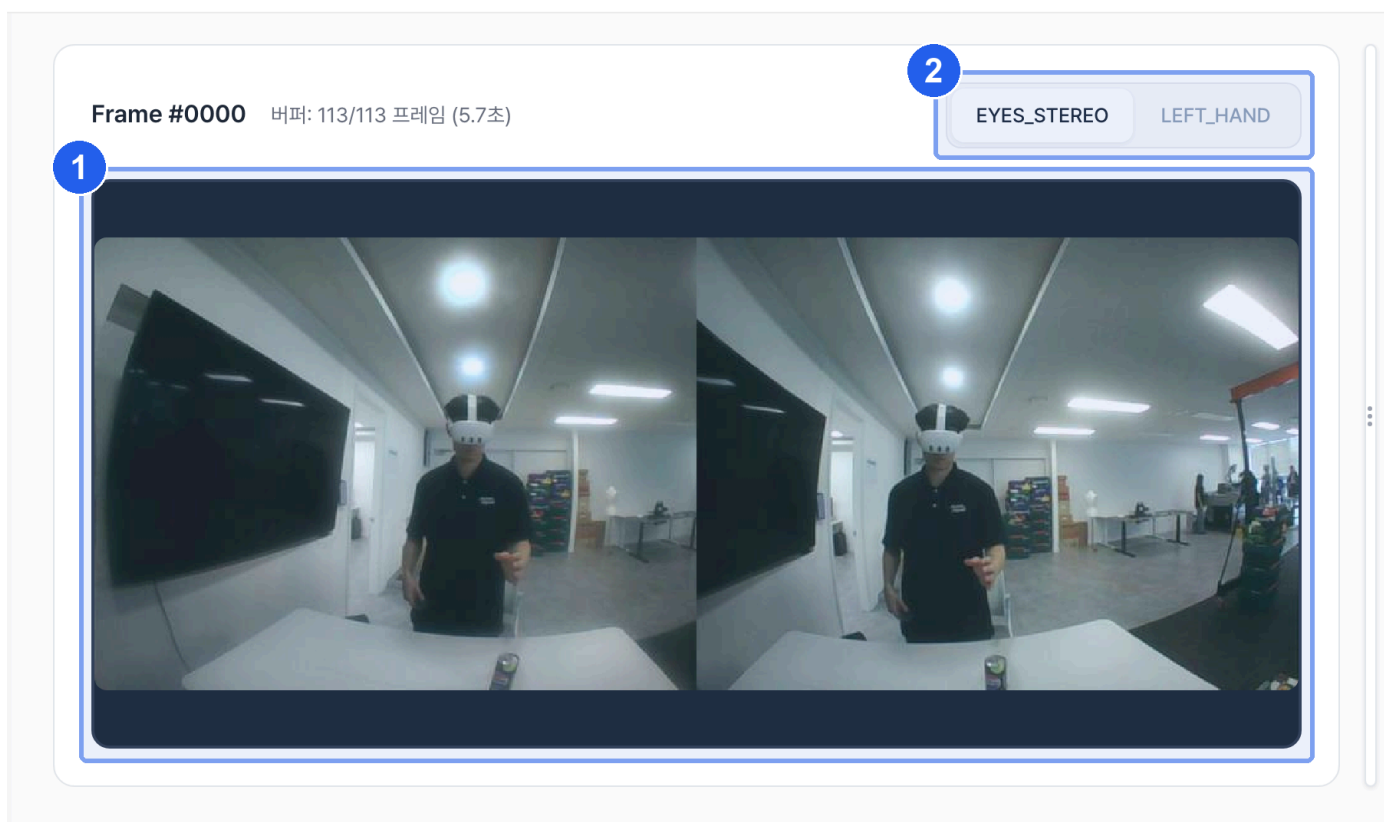
1. Header Component



- ① Automatic review status display: Shows the result of the automatic review.
- ② Left/right navigation: Move to the previous or next episode.
- ③ Data grade: Select the data grade for the episode.
- ④ Metadata: View stored metadata; some fields can be edited.

2. Frame Panel

- Graph View: View stored time-series data values as a graph.
- 3D Motion View: Based on the stored time-series data of the robot's joints, visually check the robot's actual motion through the URDF model.



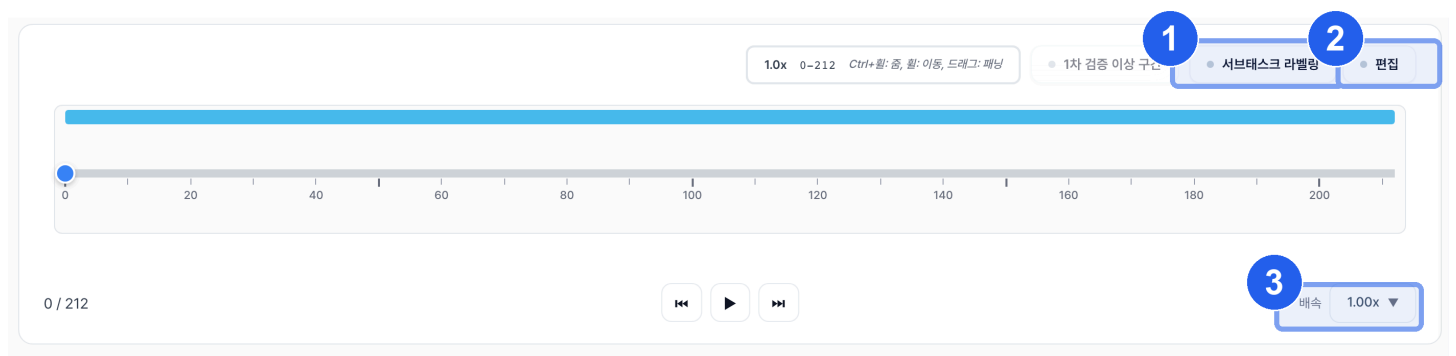
- ① Image frame: View the stored image frames.
- ② Camera view switching: Use the keyboard shortcut 'i' to switch between and view different camera views.

3. Data Visualization View



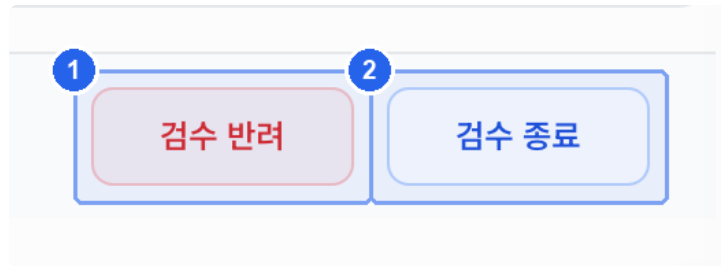
- ① Switch between Graph View / 3D Motion View
- ② Legend: Select which time-series data items are shown or excluded on the graph.
- ③ Expand: Enlarge the graph view.
- ④ Zoom: View the graph in fullscreen.
- ⑤ Dropdown: Select which time-series data to display on the graph.

4. Timeline Panel



- ① Subtask labeling: Add subtasks via drag-and-drop or the keyboard shortcut 'a'.
- ② Edit: A feature for trimming unnecessary sections from the recorded episode.
- ③ Playback speed: Select the playback speed.

5. Reject Review / End Review



① Reject review

② End review

3. Manual Review and Labeling Procedure

1. Use the image frames and 3D Motion View to check whether the episode was recorded according to the collection guidelines.
2. Based on the check results, select the data grade for the episode.
3. If the episode does not meet the guideline criteria, click **[Reject Review]** to end the review.
4. Episodes that pass manual review proceed to subtask labeling according to the collection guidelines.
5. Add subtasks in the **[Task Selection]** modal, which opens by pressing the keyboard shortcut 'a'.
6. Once all labeling work is complete, click the **[End Review]** button to finish the review and labeling for the episode.

[Chapter 4] Other Key Fixer Pages and Term Definitions

1. Guide to Other Key Fixer Pages

1. [Left sidebar] > [Data] > [Statistics]

- View key metrics such as the total number of episodes collected, total frame count, and total accumulated time.



- ① Key metrics
- ② Collection status by project and daily collection trend chart

2. [Left sidebar] > [Data] > [Data Management]

- Track the progress status of each episode in real time, from the recording stage through final review completion.



- ① Pipeline status
- ② Storage status

프로젝트

라운드

전체

전체

529개 파일 중 50개 표시 (페이지 1/11)

0개 선택됨

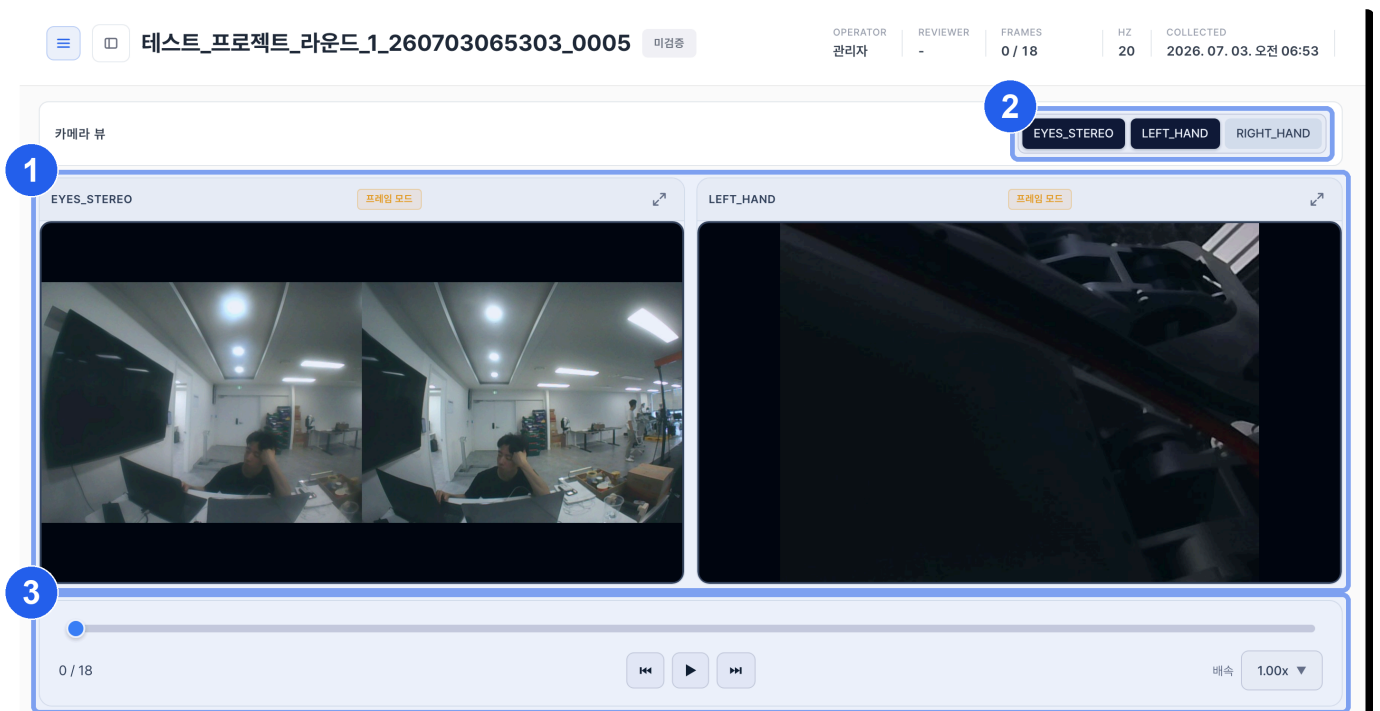
[illegible]



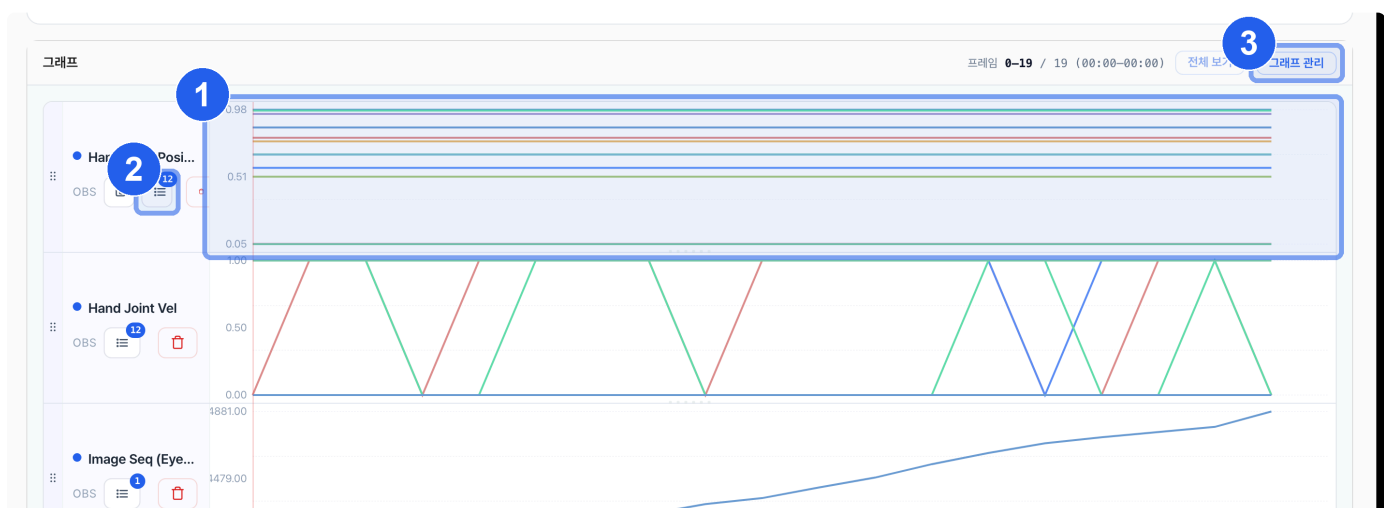
- ① Search, filter
- ② Download

3. [Left sidebar] > [Data] > [Analysis]

- View collected episodes in detail.
- Provides graphs that visualize the time-series data stored in an episode, helping with data analysis.



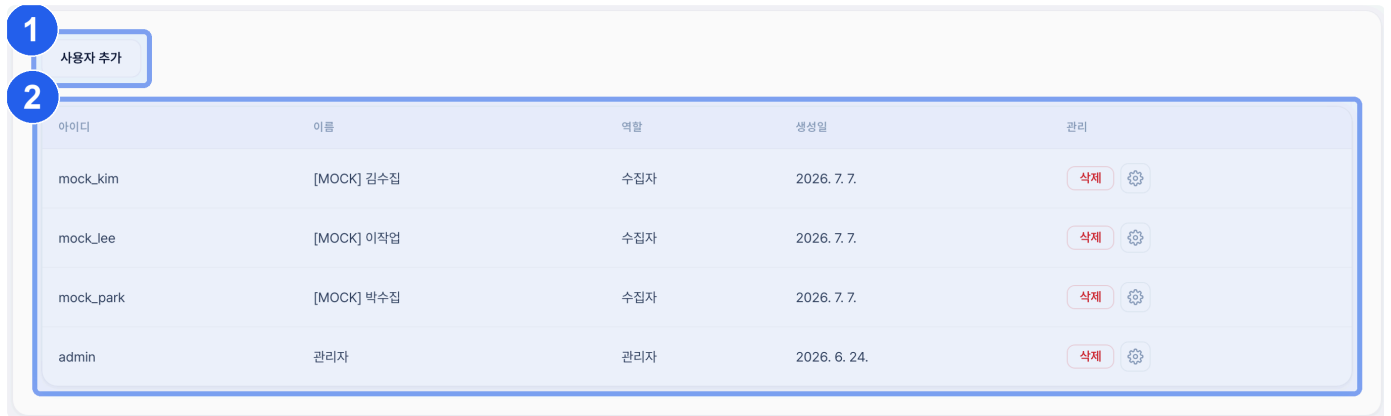
- ① Camera view
- ② Camera channel selection
- ③ Playback controller



- ① Time-series graph (value trend by frame index)
- ② Legend, filter (show/hide all, select by body part)
- ③ Graph management (add/remove graphs)

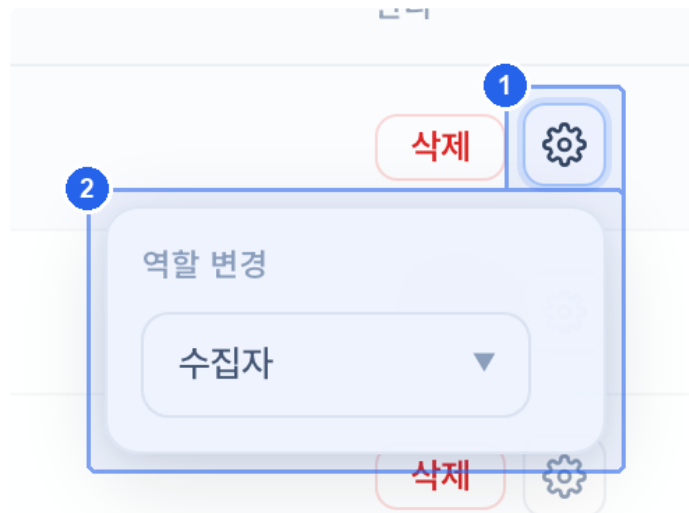
4. [Left sidebar] > [Management] > [Users]

- An admin page for creating, editing, and deleting users of **Fixer** and **Recorder**.



아이디	이름	역할	생성일	관리
mock_kim	[MOCK] 김수집	수집자	2026. 7. 7.	삭제 ⚙️
mock_lee	[MOCK] 이작업	수집자	2026. 7. 7.	삭제 ⚙️
mock_park	[MOCK] 박수집	수집자	2026. 7. 7.	삭제 ⚙️
admin	관리자	관리자	2026. 6. 24.	삭제 ⚙️

- ① Add user
- ② User list



- ① Click settings button
- ② Change role

2. Key Term Definitions

1. System

- **Fixer**: A web application for labeling, reviewing, and downloading collected data. Episode preprocessing and management are performed here.

- **Recorder:** An application for recording robot data. The **Recorder** server communicates with the robot via DDS and records sensor data, images, commands, etc. in HDF5 format.

2. Project and Labeling Structure

- Episode: Refers to a single recording; each created HDF5 file corresponds to exactly one episode.
- Project: The top-level data collection created for a specific collection goal, consisting of one or more rounds.
- Round: A subset that makes up a project, consisting of multiple episodes performed under the same collection conditions or purpose.
- Main task: The top-level classification of the target work for which data is being collected in the project.
- Subtask: A subdivided task classification under the main task.

3. Episode Data Format

- HDF5: A data format that stores large volumes of data in a hierarchical structure. **Fixer/Recorder** saves each episode as a single HDF5 file.

4. Communication and Equipment Control

- DDS Topics: Topics published via DDS communication by the robot or master arm.
- Wired connection mode: A deployment and connection mode that performs stable DDS communication over Ethernet.
- Recording readiness check: A system readiness check performed by **Recorder** before or during recording. If conditions are not met, it blocks the start of recording or stops an ongoing recording.
- Pedal: A foot switch connected to the computer via USB, serving as the recording control trigger.
 - Start/stop recording: Press the pedal's center button to start; press it again to stop.
 - Cancel recording: Press the pedal's left button to cancel the recording.

5. Review Process States

- Automatic review: A step where **Fixer** runs automated checks to verify whether an episode meets the configured criteria.
- Manual review: A step where the operator selects a data grade or determines a rejection according to the guidelines.
- End review: The act of the reviewer clicking **[End Review]** to finalize the review result. A pass determination in manual review is only finalized once a data grade has been selected and **End Review** is clicked.

- Review rejection: A state where the collected data does not meet the guidelines and cannot be used as training data.