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1. Install and Run Application

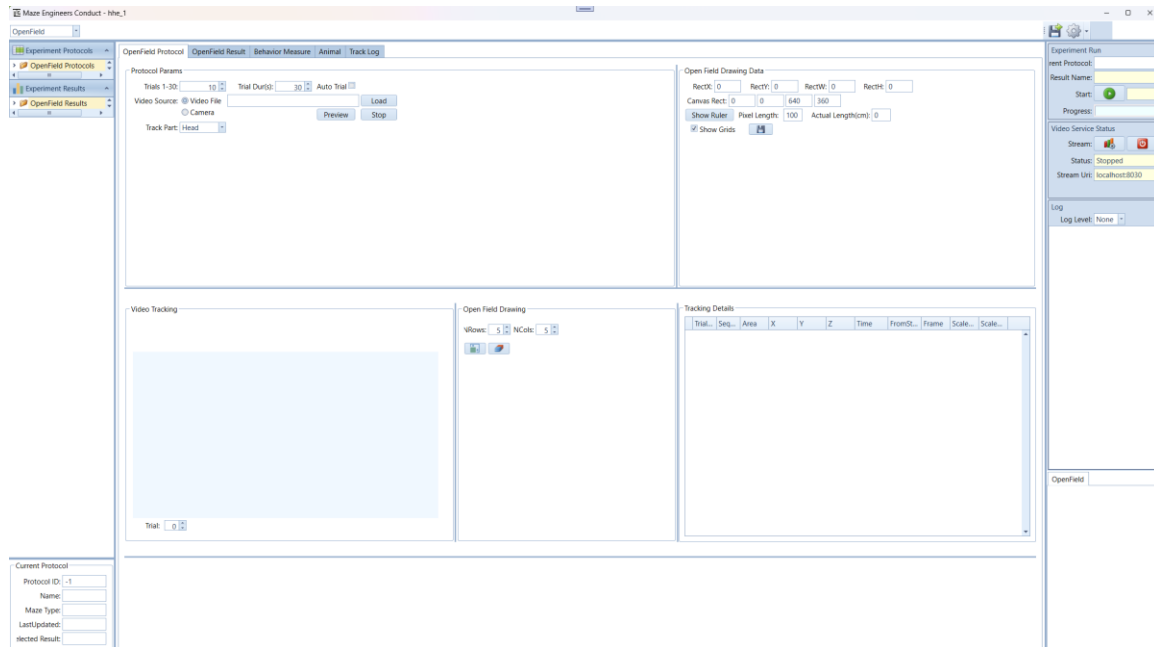
The application can be installed in folder C:\ConductScience. There are subfolders

ConductVisionF\ConductVisionPy

ConductVisionF\ConductVisionUI

The executable is ConductVisionUI\bin\ConductVisionUI.exe. Double click on the executable.

The application appears as below:

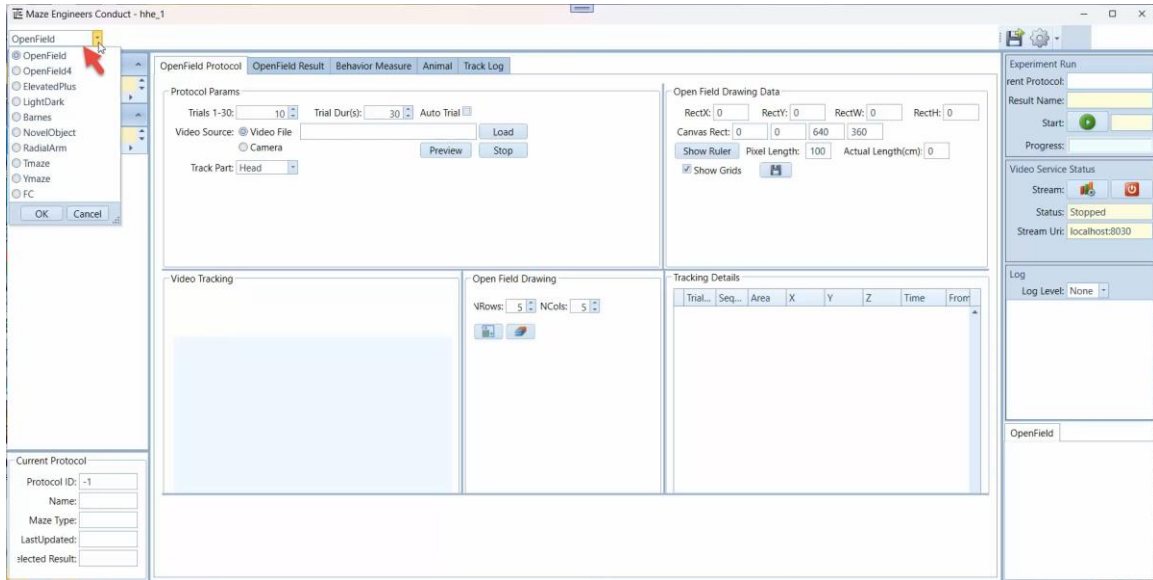


2. Maze Types

Click on the maze type field to view or select a maze type. You can switch to another maze without having to restart the application.

The maze types are defined in the package the user purchased. Pack1 is currently available.

- Pack1: Barnes, Light-Dark, Novel Object, OpenField, OpenField4 (Open Field Set of 4), Elevated Plus, Radial Arm, T-maze, Y-maze, U-maze (User defined maze)
- Pack2: Sociability, Phenotyping, Water Maze
- PackFish: Zebrafish
- PackFC: Fear Conditioning System
- PackAuto: Automated mazes

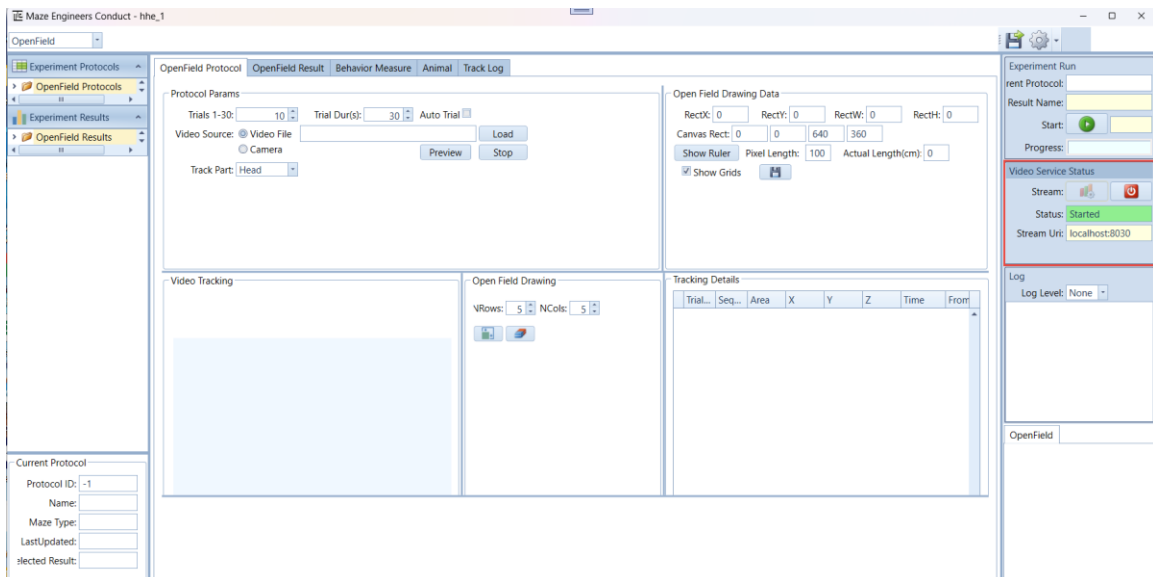


3. Video Service Connection

To use AI based video tracking service, the user needs to start the service stream. When the service stream is established, the status field shows text Started and color becomes green. If there is a need to stop the stream because of the exception, click on the stop button and then start again.

When the application starts, it is in the stop state.

The stream uses local machine port 8030. It is usually available for users. If the port is blocked, please contact your system administrator to open the port.

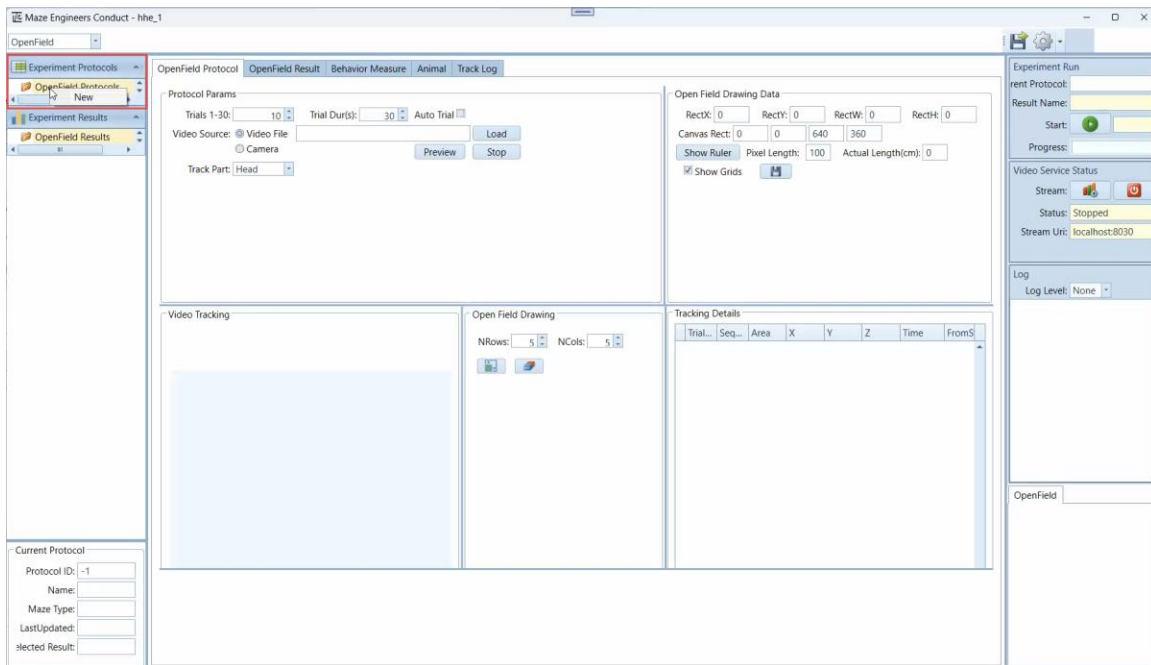


3. Experiment Configuration

The application provides a user interface to configure and execute experiments (protocols) and view execution results.

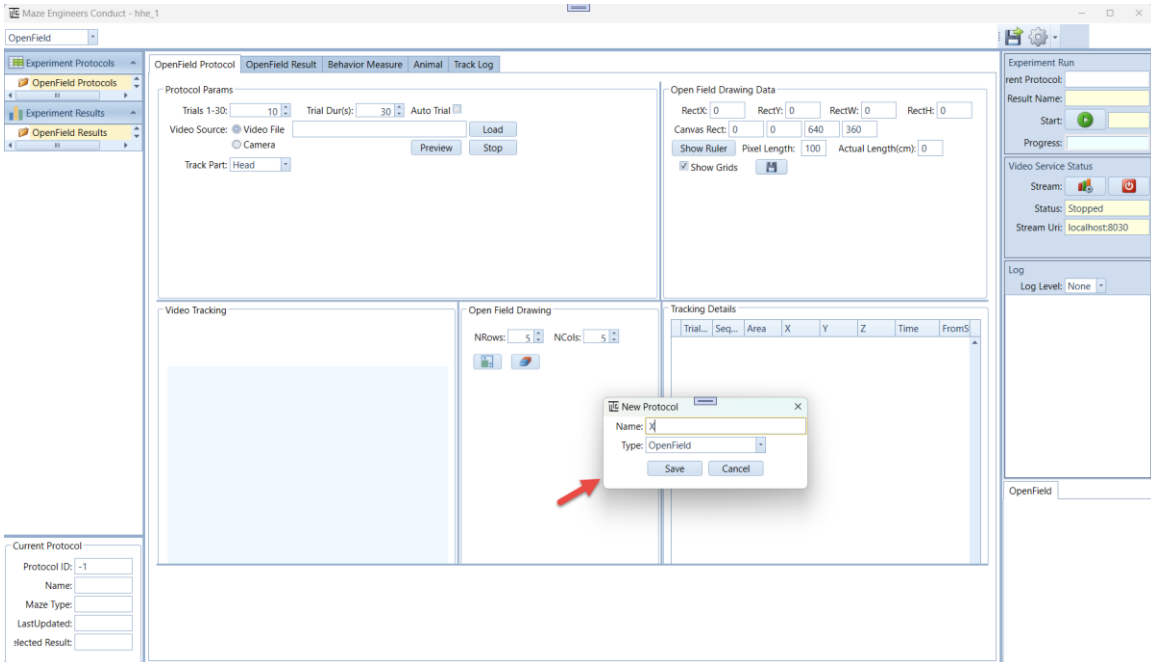
3.1 New Experiment

To create an experiment protocol, right click on "OpenField Protocols" on the left panel. A menu item **New** appears as shown below:

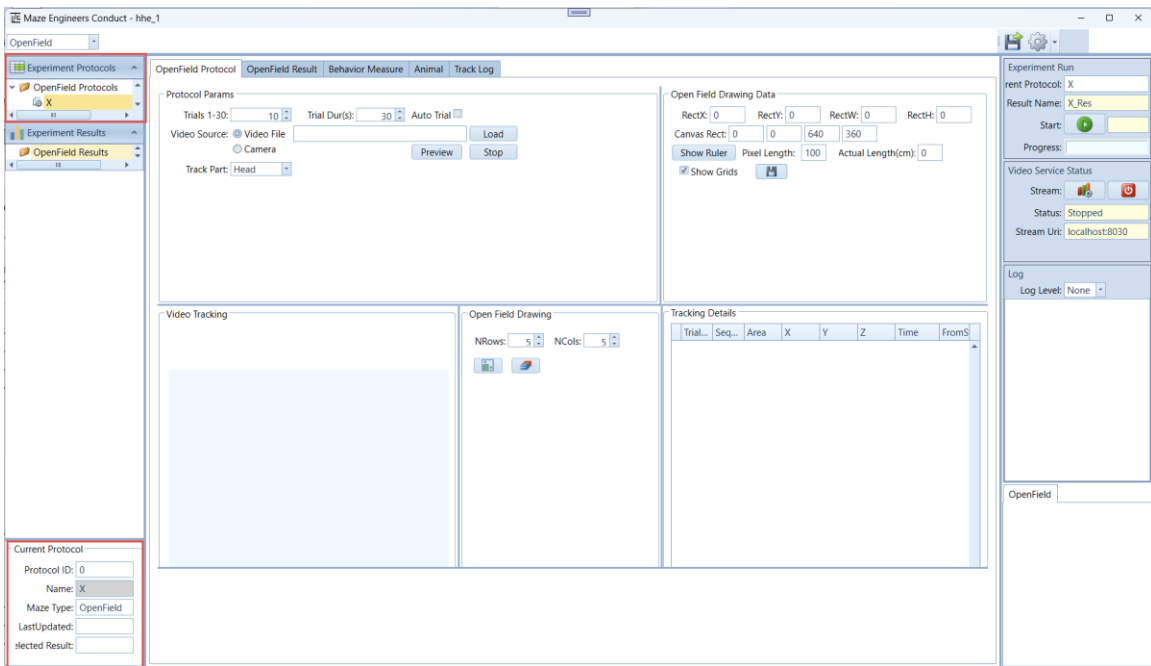


If a different maze like LightDark is selected, the protocols will be "LightDark Protocols".

Click on **New** menu item, a "New Experiment" window appears as shown below. Fill in an experiment name and click on **Save** button.



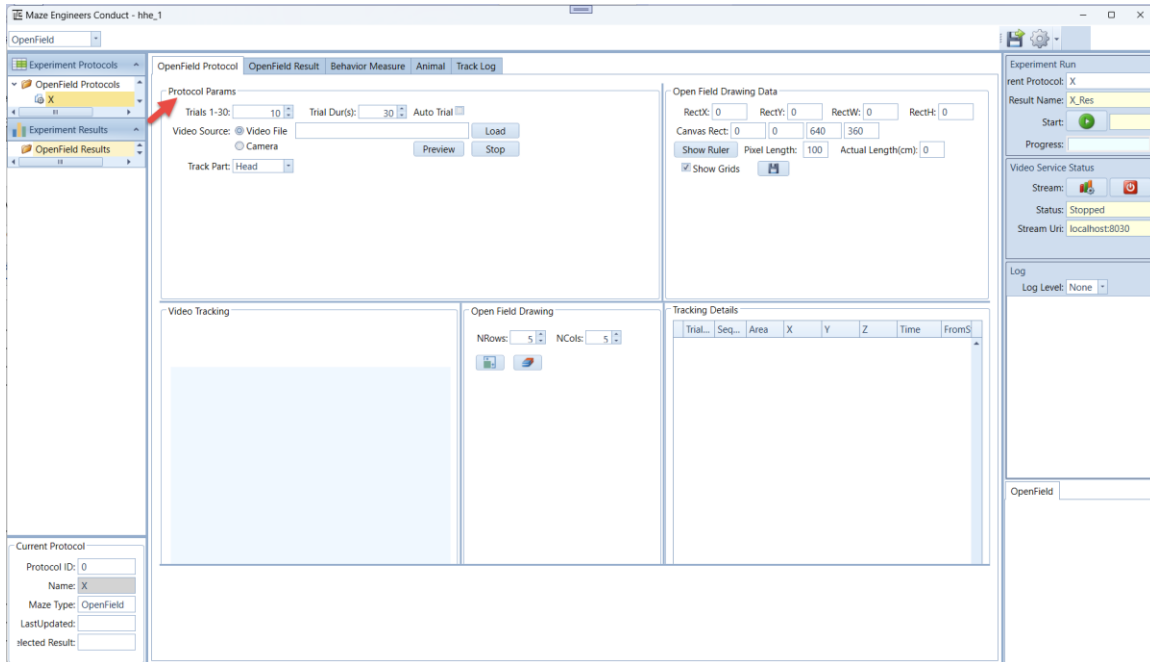
Once the experiment is created, it appears in the folder "OpenField Protocols" as shown below:



An experiment can be deleted by right click on the experiment. The current active protocol is indicated in the left bottom of the screen.

3.2 Configure Parameters

To configure an experiment, double click on the experiment under the folder "OpenField Protocols".



3.2.1 Protocol Parameters

- **Trials (1-30)** - represents number of the trials to continuously run in the session
- **Trial Durs(s)** - represents the trial duration in seconds
- **Auto Trial** – If selected, the next trial will automatically start after the completion of a trial. If not selected, a dialog will appear asking the user to place the animal in the starting position before starting.
- **Video Source Video file** - to track a video file, the user needs to load a video file.
- **Video Source camera** – this is to track rodent in real-time
- **Preview** – in living tracking mode, the user can preview the maze; stop preview will produce a thumbnail that can be used for drawing the tracking areas.
- **Track Part** – the user can choose the track part, either head or body. Some mazes only allow for head tracking.

3.3 Area drawing

There are two styles of drawing: rectangular area and polygon.

Rectangular area drawings include

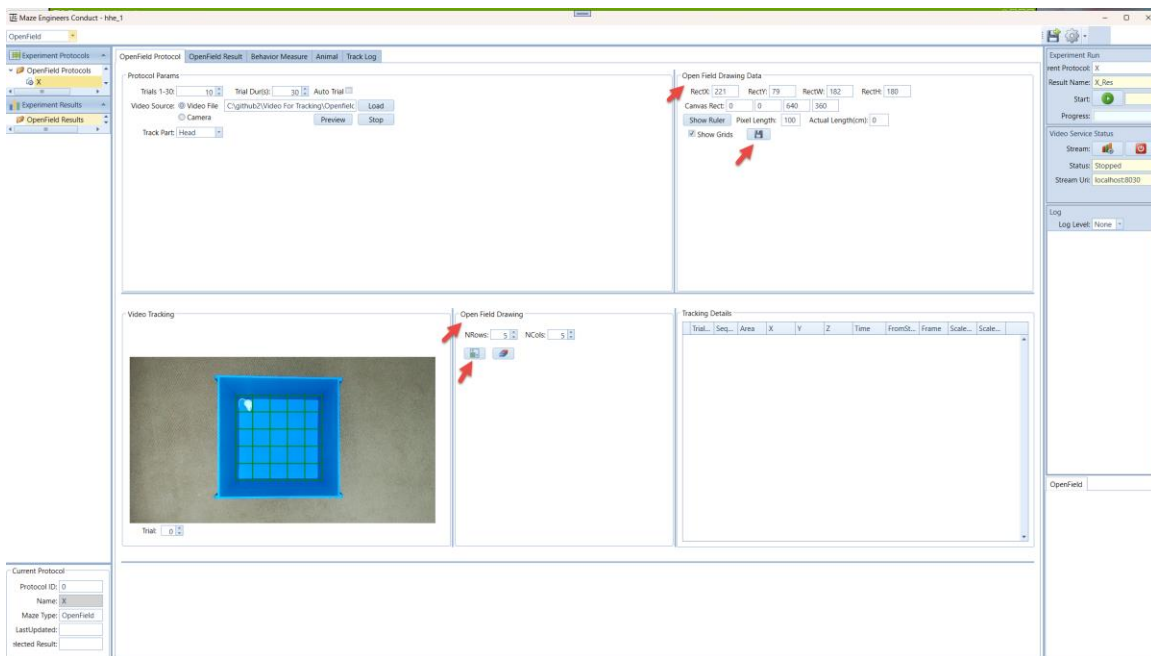
- Barnes
- Light-Dark
- Novel Object
- OpenField
- OpenField4 (Open Field Set of 4)

Polygon area drawings include

- Elevated Plus
- Radial Arm
- T-maze
- Y-maze
- User defined maze

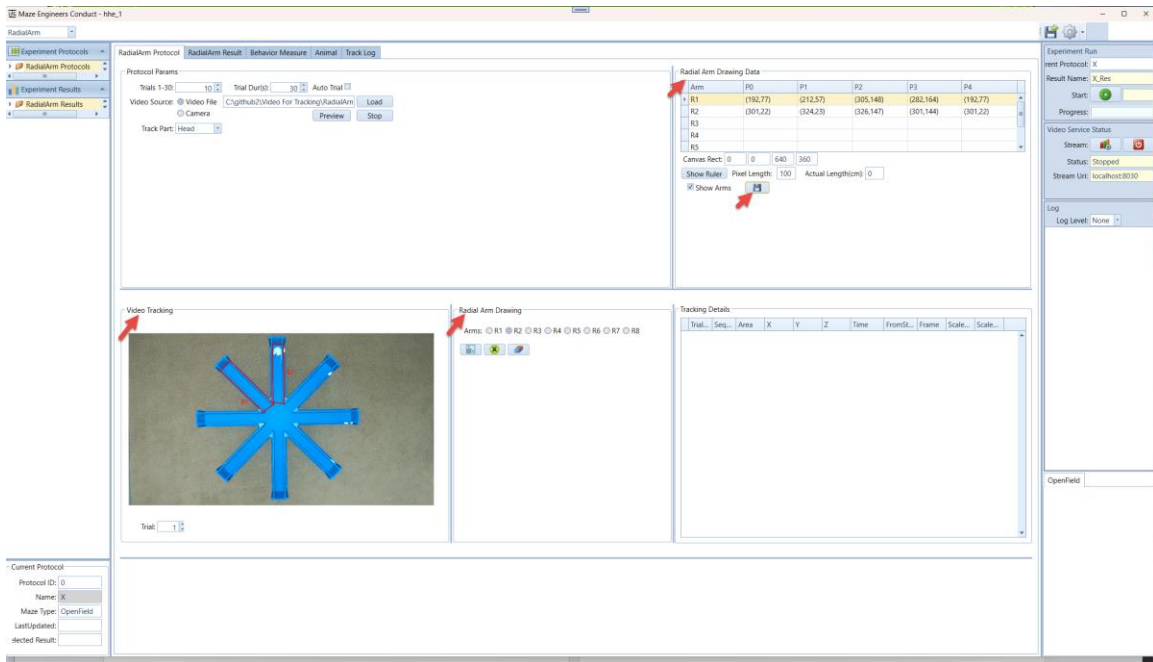
3.3.1 Drawing a Rectangle

- Click Button in the Open Field Drawing group to enable the drawing mode.
- Select NRow and NCol
- On the maze, select the point on the left up corner and drag to the right bottom inside the maze
- After the drawing, click Save button on Drawing Data group.



3.3.2 Drawing a Polygon

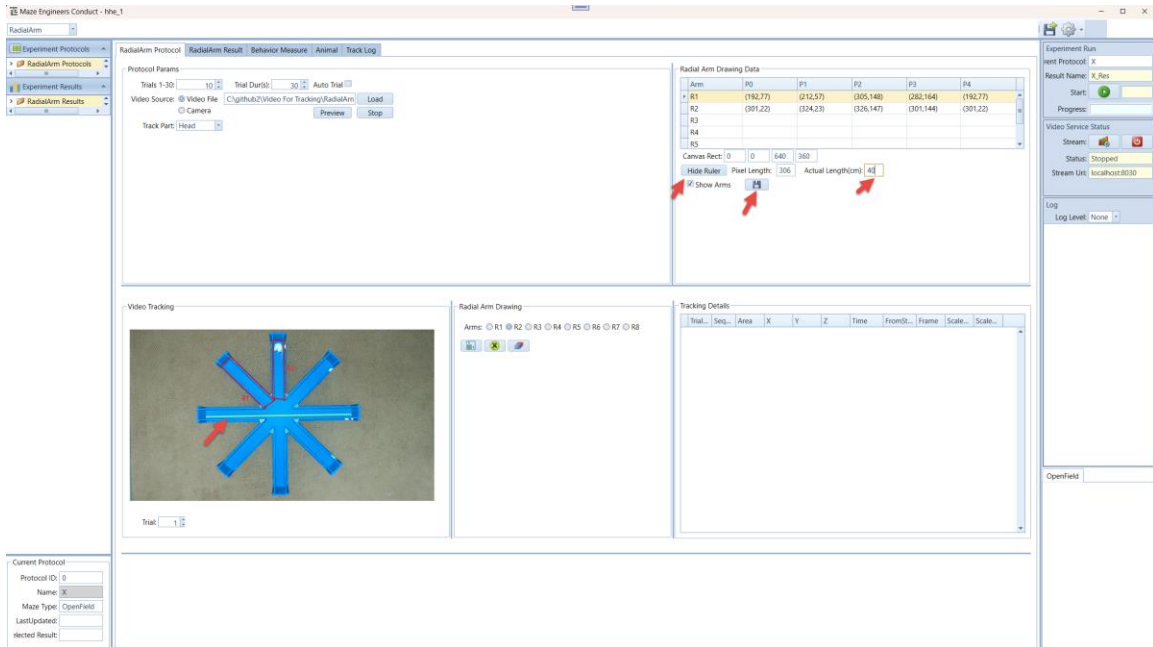
- Enable Button in Radial Arm Drawing group to enable drawing mode
- Select a radial arm
- Click four points of an arm to form a polygon
- After the drawing, click Save button on Drawing Data group.



3.4 Ruler

In software, the camera image distance is defined as pixels. We are interested in reporting the distance meters like cm. So, we need to know the pixels distance on screen maps to meter distance cm.

- Click on the Show Ruler button, and a line appears on the maze
- Draw the ends of the line to two end points of the maze
- Enter the real distance in the field.
- Click Save button the save the data

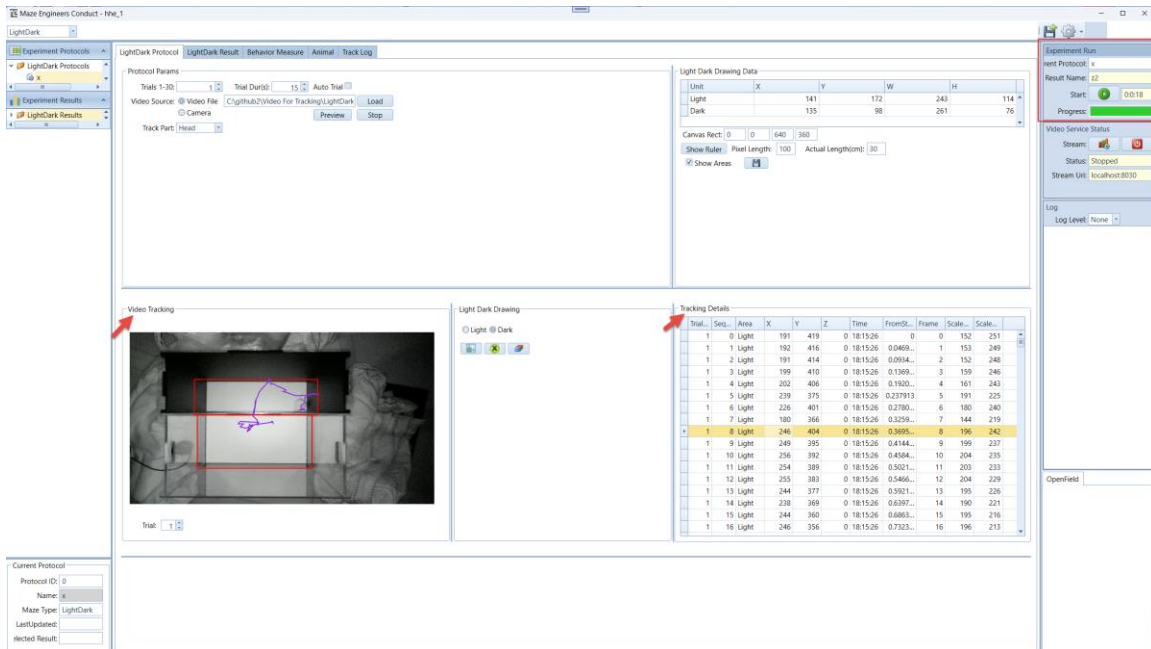


4. Experiment Run

To execute an experiment, select the protocol under "Protocols" on the left navigation panel and double click on it. Make sure the service stream is connected.

4.1 Run Experiment

Enter a name for the experiment run and click **Start** button. This will set system in the running state.



When the start button is clicked, the button state becomes stop. User can click on a stop button to stop the session run.

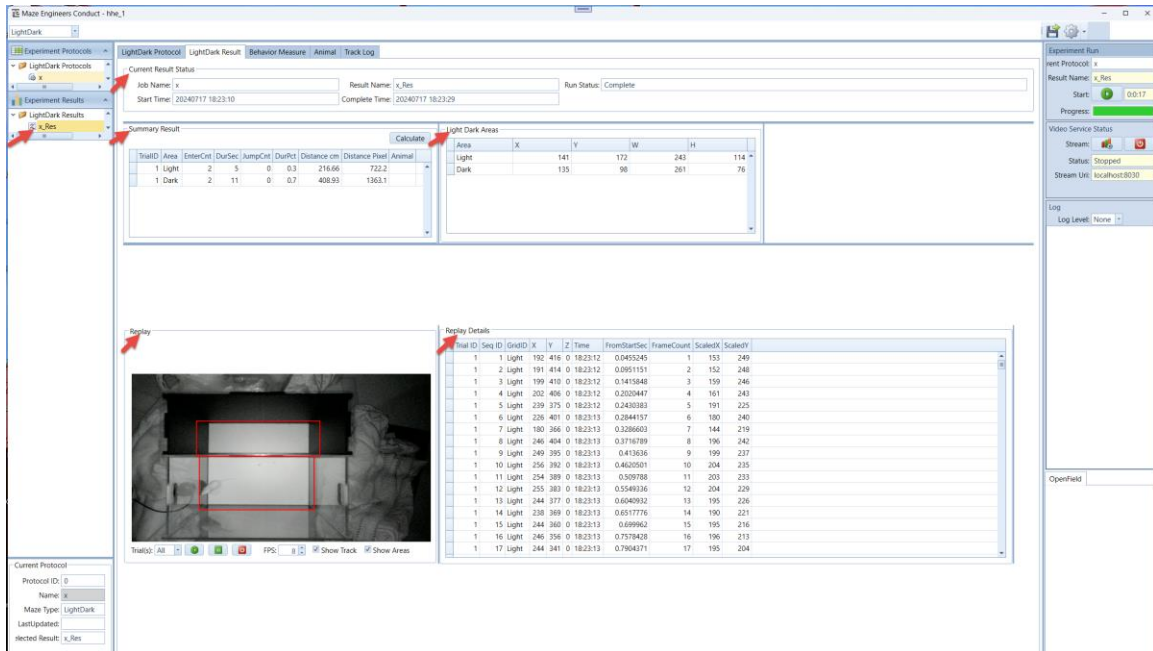
The experiment will stop when total time reaches, or all trials are completed, or the user stops it.

In the Video Tracking group, the animal moves are tracked.

In the Tracking Details group, the track details are recorded. The data grid only should the latest trial. When a trial completes, the tracking data is saved.

4.2 Result Tables

Select the result from the left Experiment Result. The results are shown on the Result tab. There are five grids.



Current Result Status: show the protocol name, result name, protocol run start time, complete time and run status

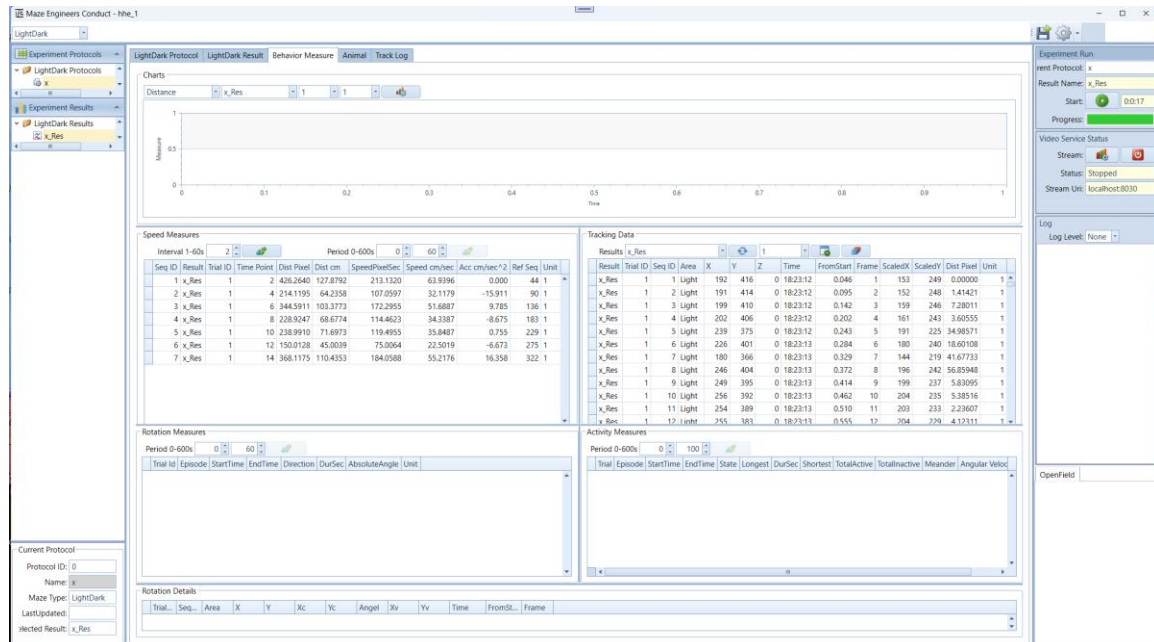
Replay Group: it allows user to replay the video at a user defined speed (frame per second)

Replay Details: it contains all tracking data of the session (multiple trials)

Summary Result: shows the statistics of each area including the enter count, duration and distances.

Area Group: shows area drawing information. The data are not important for the user at this point.

5. Behavior Measure



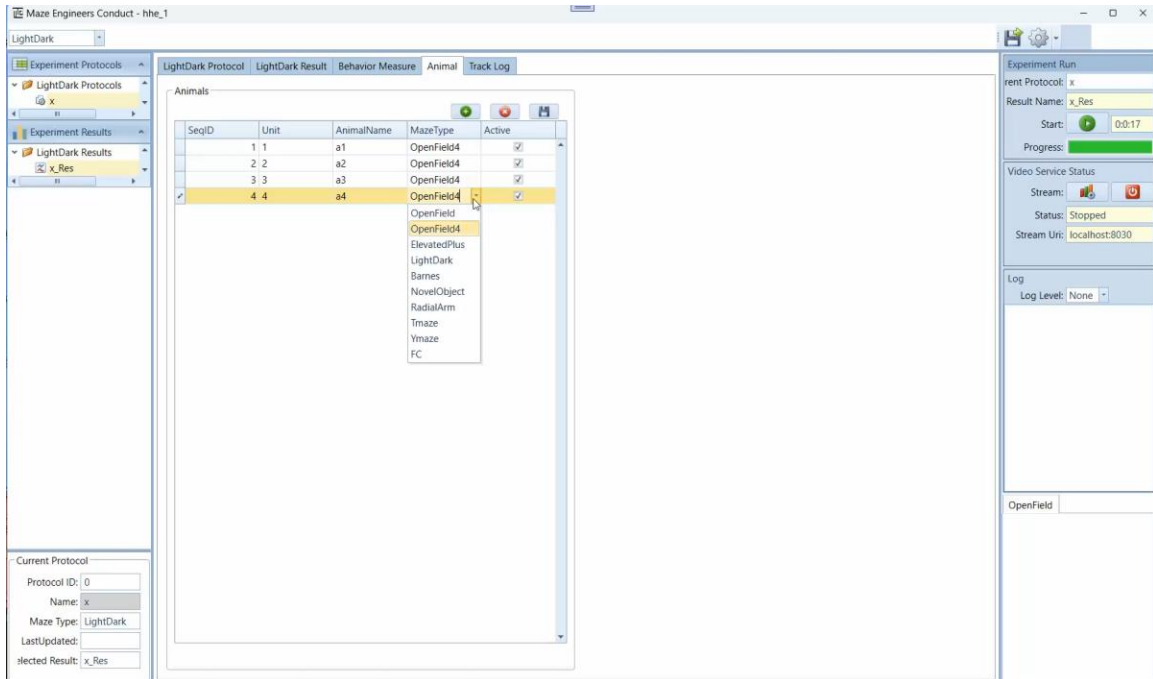
The Behavior Measure tab provides calculations of the animal motor measurements.

It allows calculation of any number of result (multiple results), trials (multiple trials) or units (open field set of 4 has 4 units).

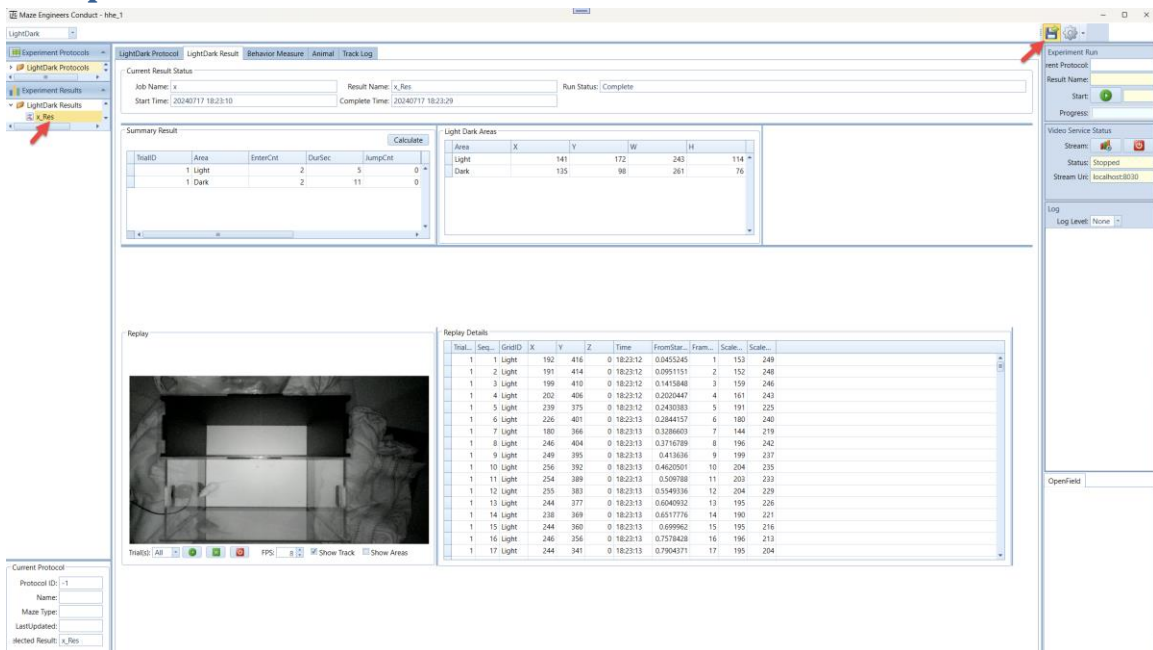
Charting provides drawing of the measurements (single trial or cross trial comparison).

6. Animal

The tab provides a place for user to enter the animal information. The animal information then is applied to the results.



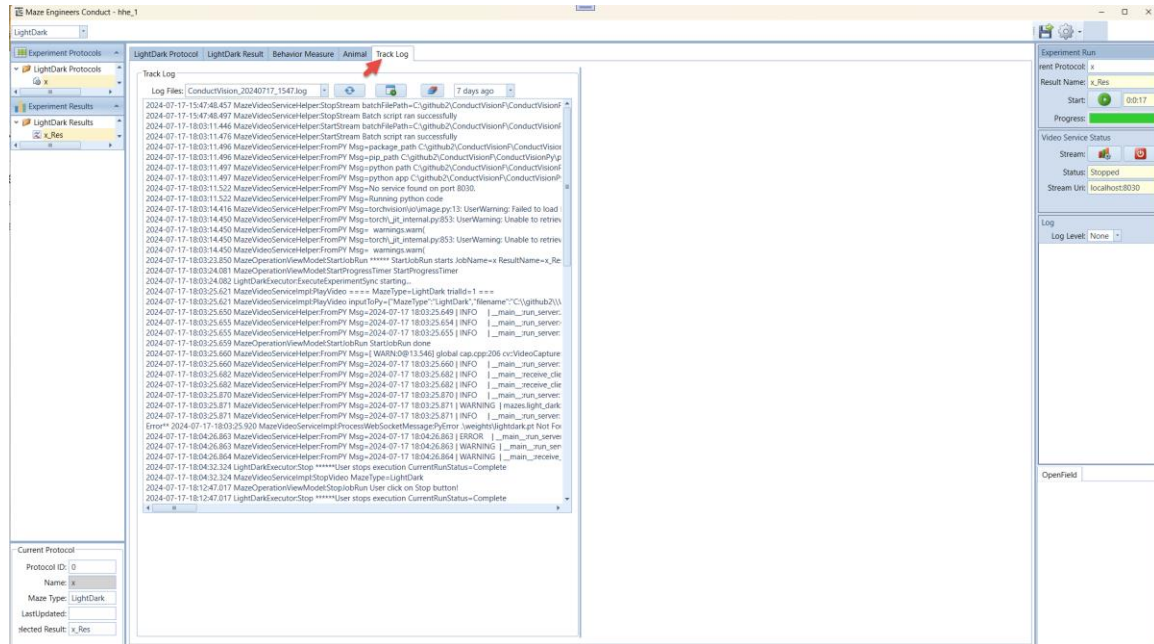
7. Export Data



- Select a result
- Click the Export button
- The out is .csv file

8. Troubleshooting

8.1 Log display



- The log content can be displayed on the screen.
- The log file is in the Log folder under your deployment folder
C:\ConductScience\bin\Log

8.2 Database files and user data

The database file contains the protocols and results. There is a separate folder containing database files and video data for each maze under bin.

