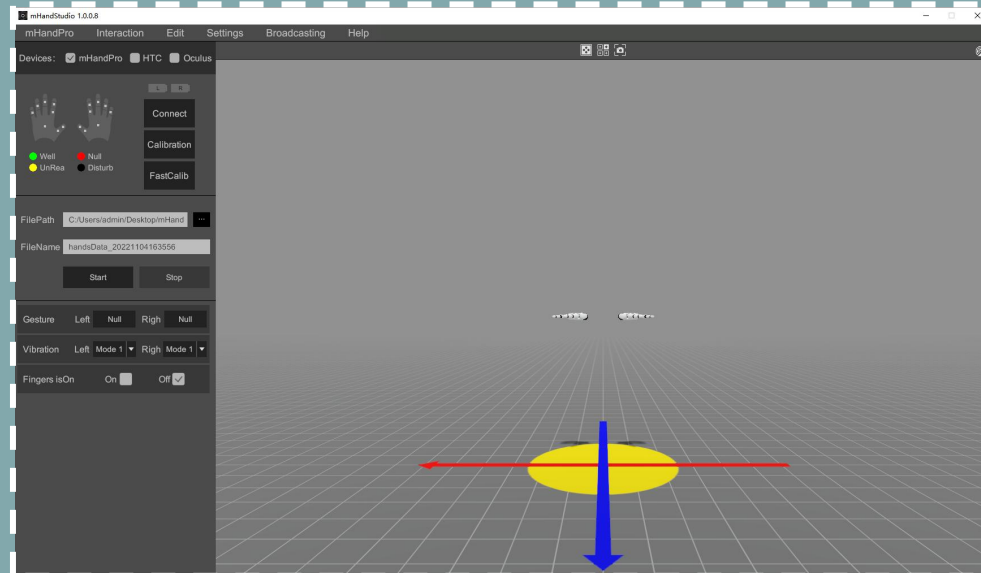


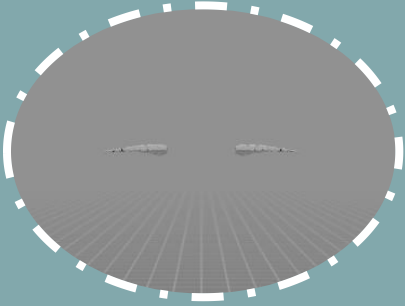
mHand Studio

User Manual



Content

- 01 System operating environment (P 4)**
- 02 System function explanation (P 6 - P 4 4)**
- 03 Frequently Asked Questions (P 4 5 - P 4 7)**



01

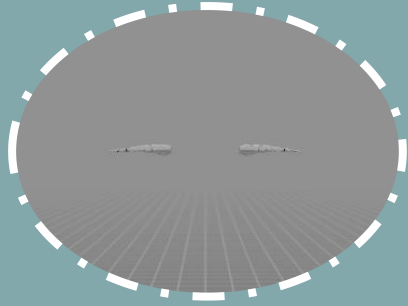
System operating environment



mHand Studio required hardware configuration

System operating environment

System operating environment	
Monitor	1
CPU	Intel 5
Operating system	Windows 10
Space consumption	200MB
Running memory	8G+
Graphics card	Discrete graphics card (NVIDIA 1660 or higher recommended in VR mode)
USB expansion port	1+ (configured according to the number and type of devices)
HTC Vive	HTC Vive set (recommended configuration: 4 base stations, 2 Trackers)
Quest2&Touch	Quest2 and Touch set



02

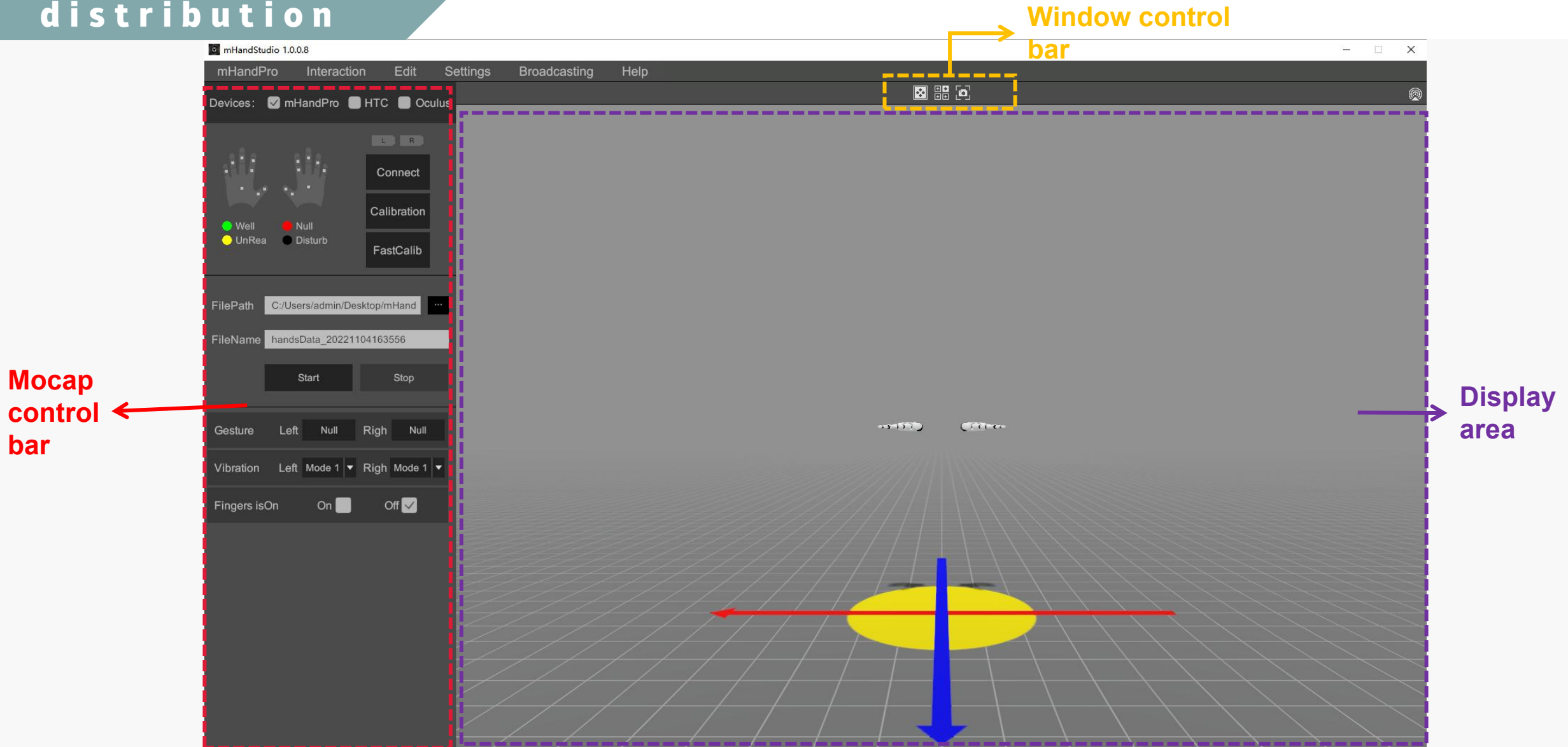
System function explanation



mHand Studio system function explanation

mHand Studio Interface Distribution

Mocap interface distribution



Interaction interface composition

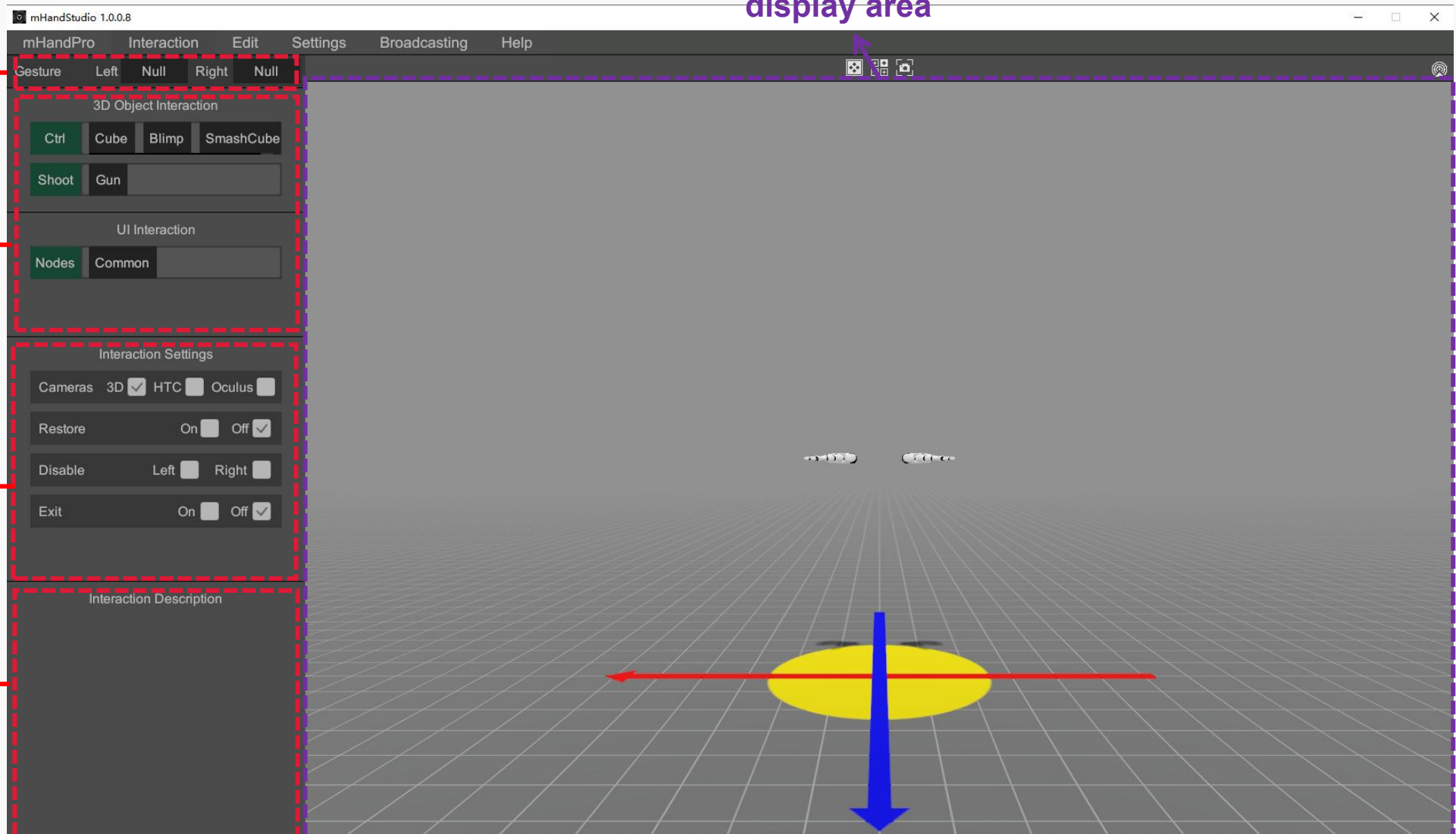
Interactive display area

Gesture Recognition

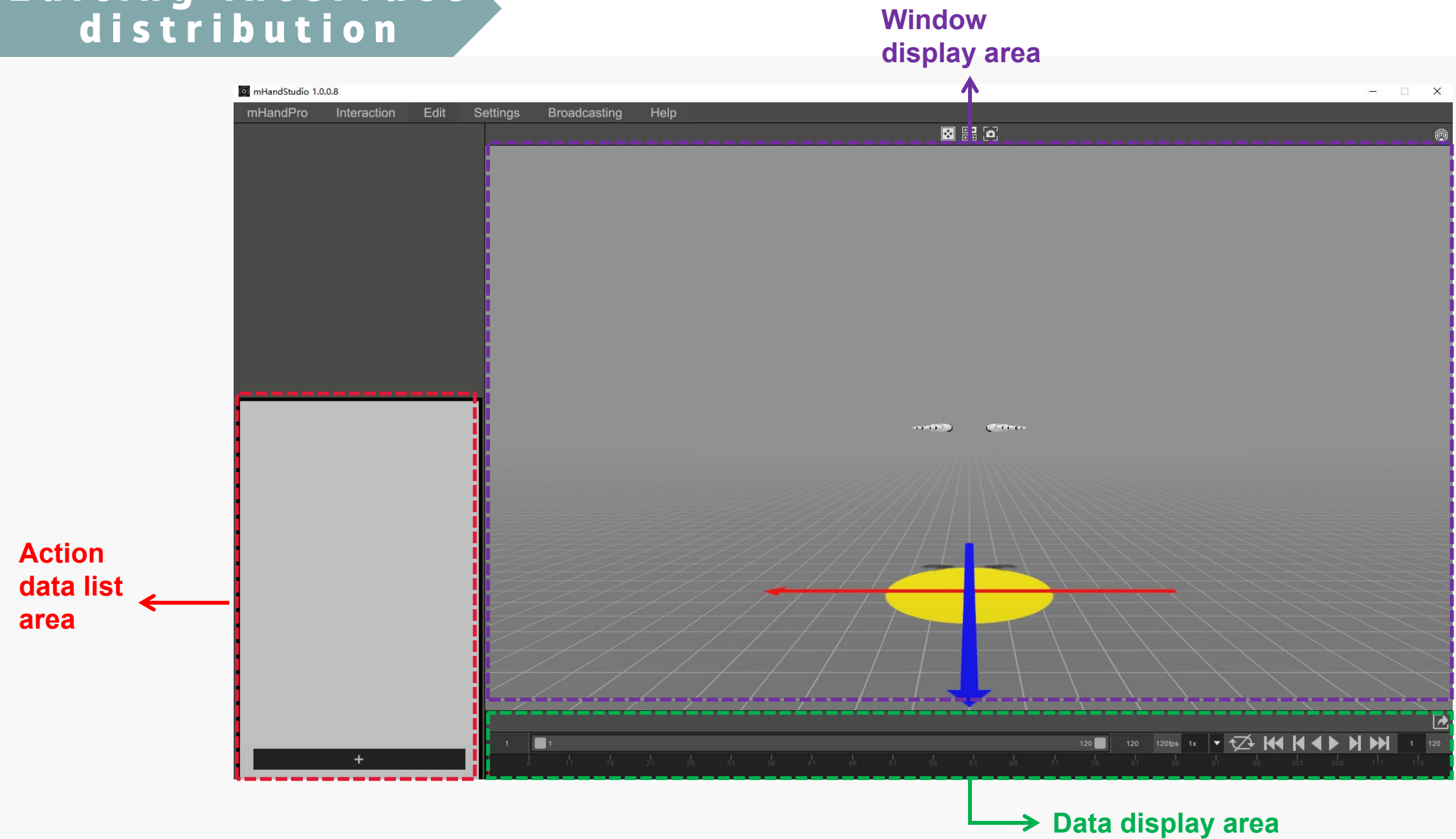
Interaction Module

Interaction Settings

Interaction Description



Editing interface distribution



① Mocap menu function explanation

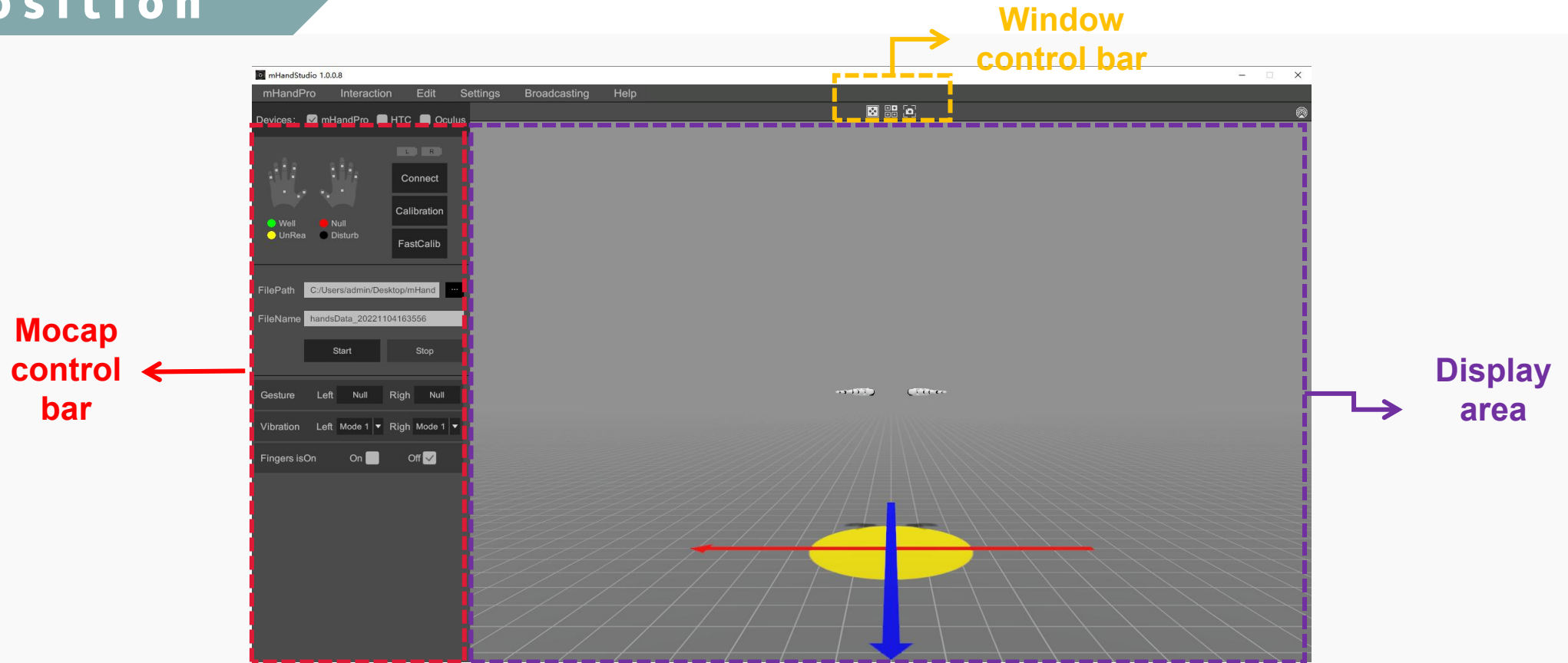


Mocap interface composition



Mocap menu function

Mocap interface composition

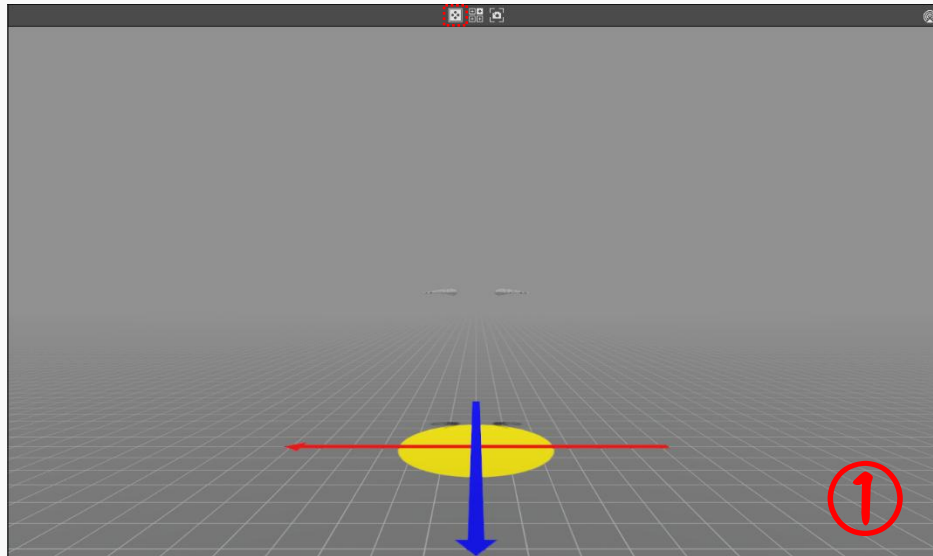


- ▶ Click the "mHand Pro" menu through the menu bar to enter the motion capture window.
- ▶ mHandPro can be used with HTC or Oculus devices.
- ▶ The motion capture window consists of three parts: **the motion capture control bar, the window control bar, and the window display area.**

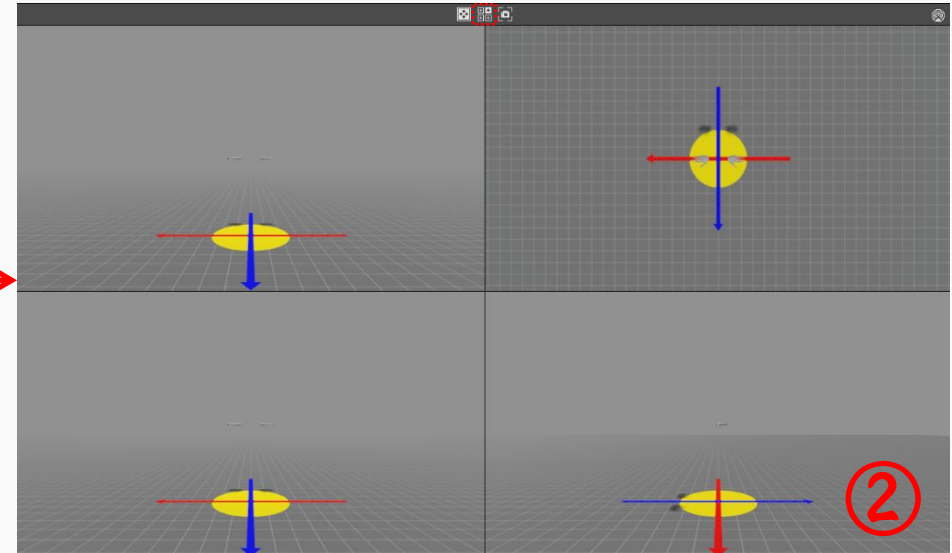
Character control bar



Single-View Window



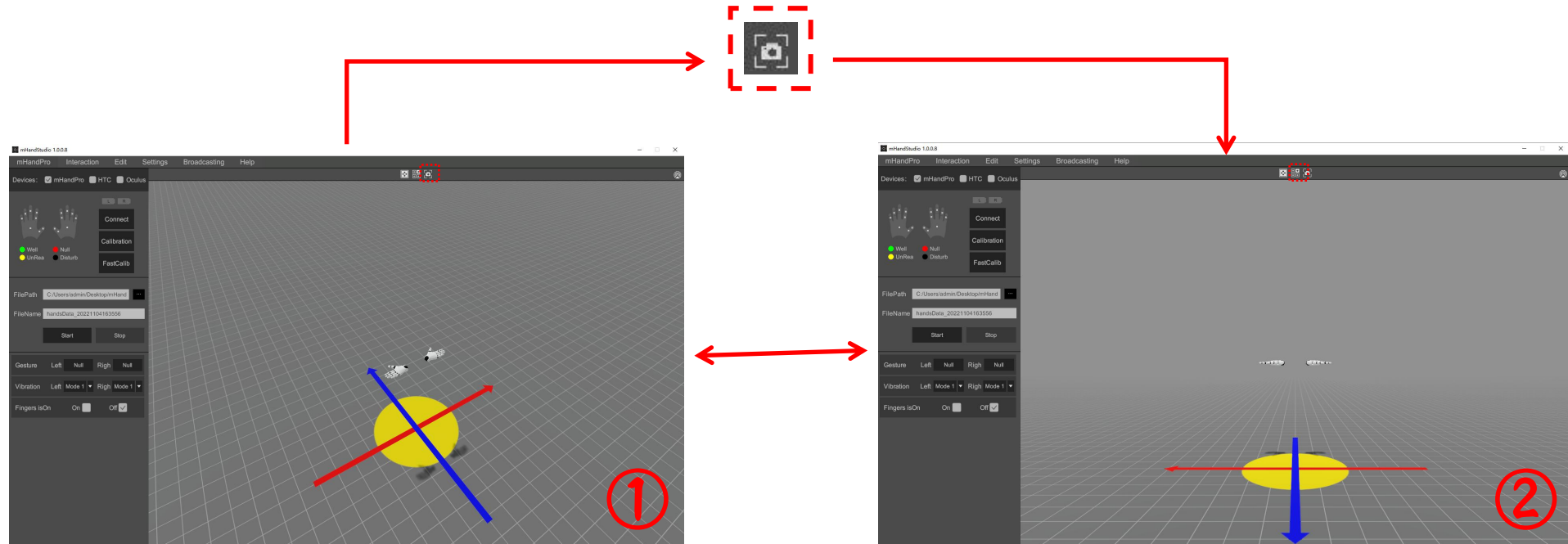
Four-Views Window



Windows Toggle

- The default display is a **single-view window**, but the "four-views window" button The window can be displayed as a quad window, as shown in Figure ②.
- Both single-view window and four-view window can be moved and rotated individually.

Character control bar



Camera Reset

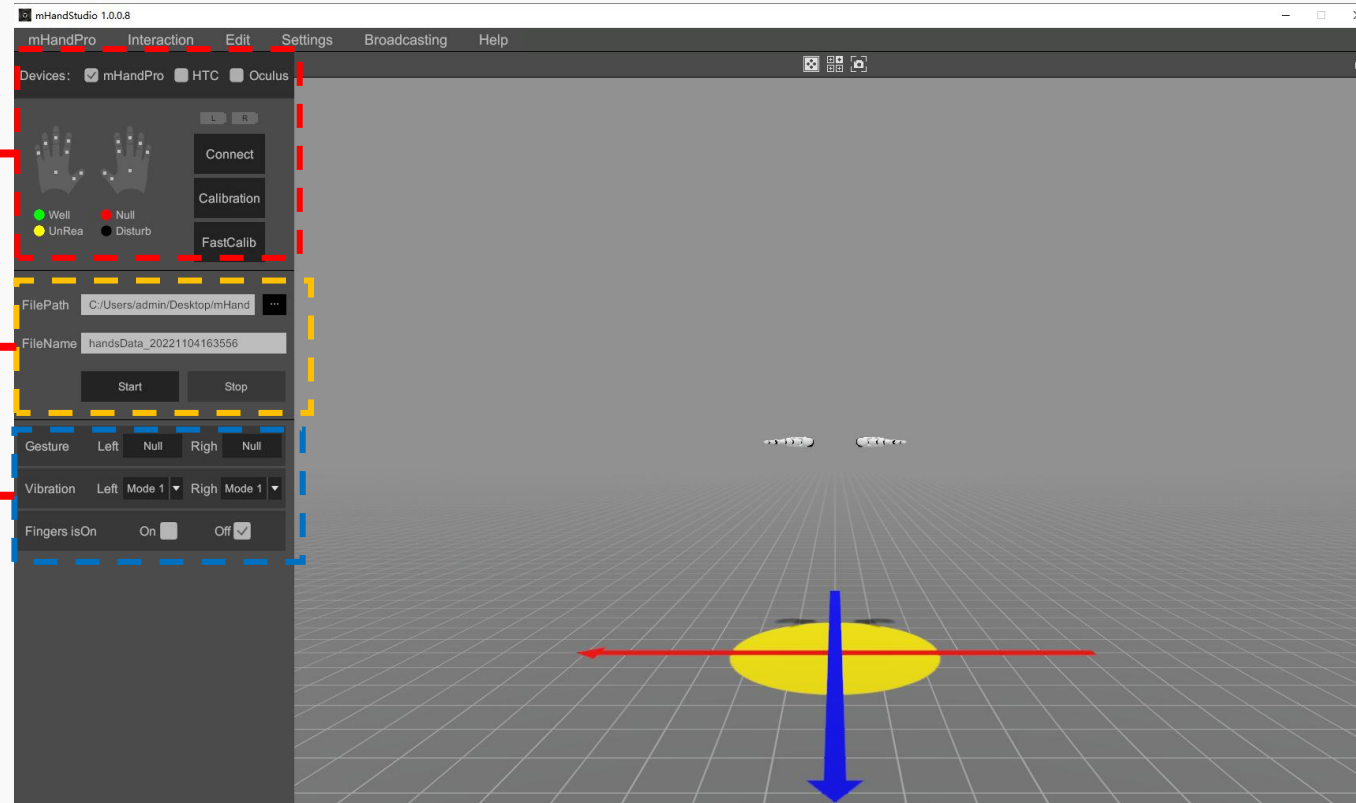
- **Camera reset:** Click the camera reset button, the camera will reset to the position relative to the model. As shown in Figure ② (Relative position: the lens is set in the system to have a default relative distance to the model)
- **Application scenario:** When the model moves to a far away activity and the lens still stays at the origin, you can use this function to pull the lens near the model to observe the model activity

Mocap control bar

Device
Control Bar

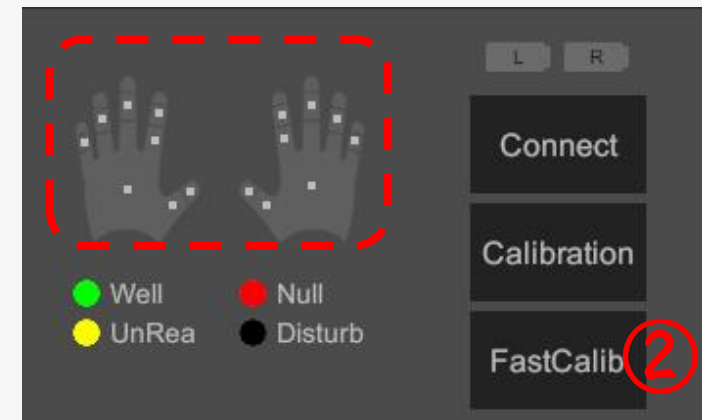
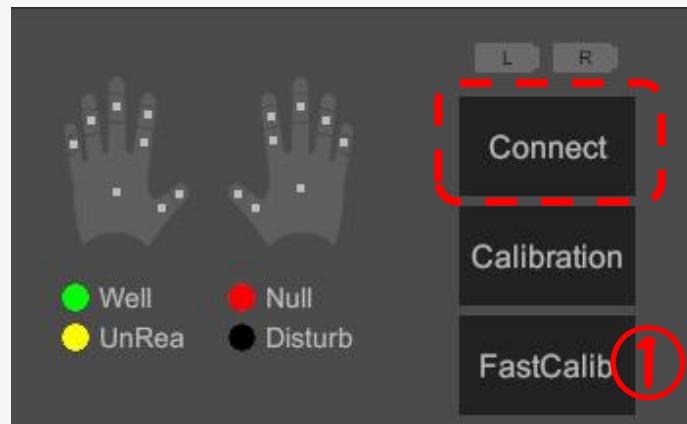
Data logging
control bar

Mode
setting bar



► Mocap control bar is divided into three parts: device control bar, data logging control bar, and mode setting bar

Mocap control bar

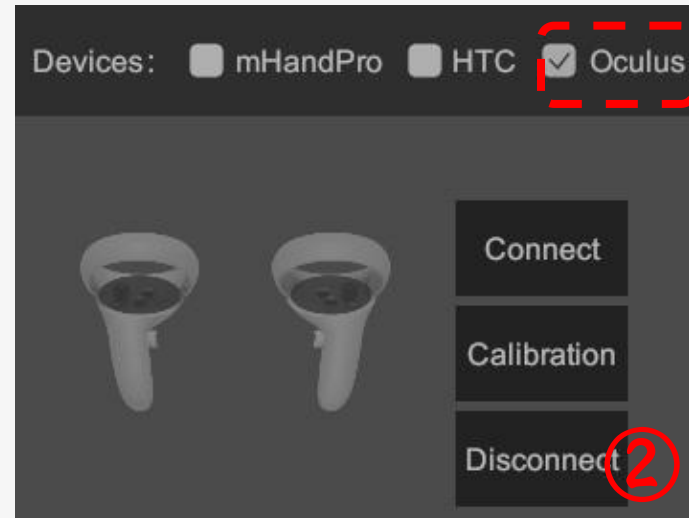
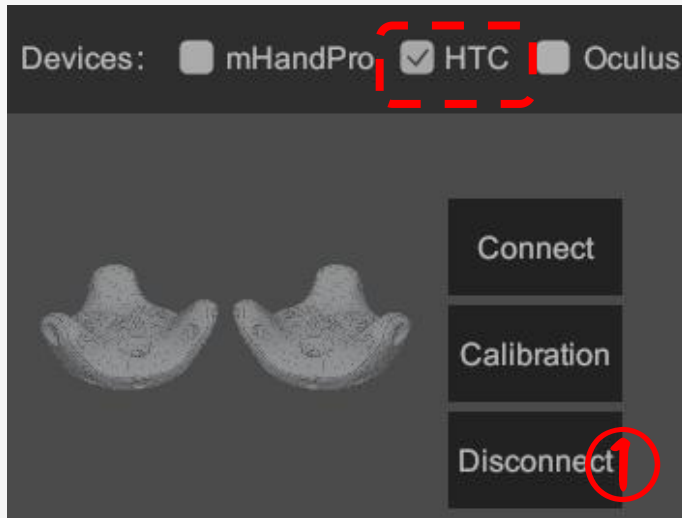


Equipment
Type

► Click the "Connect" button to connect the mHand Pro as shown in Figure ①.

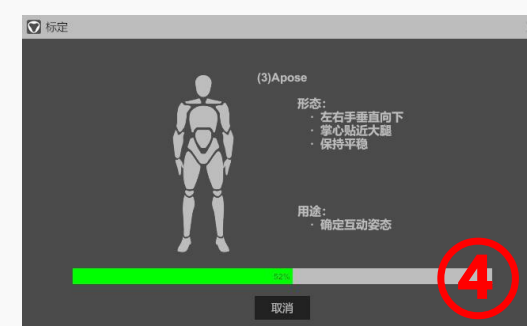
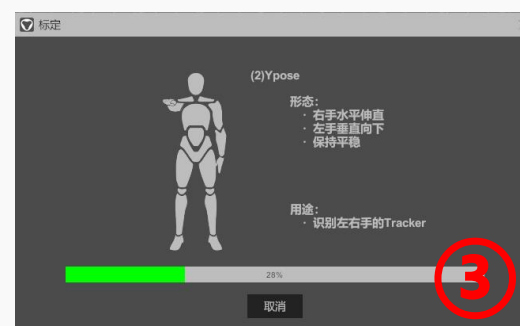
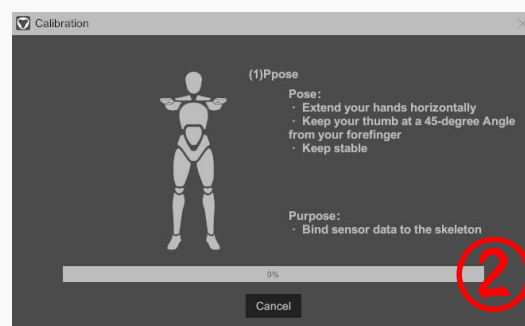
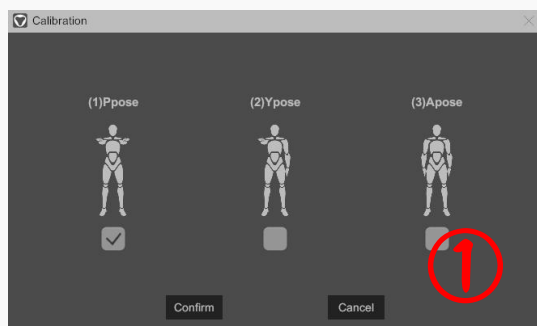
► After the device is connected, wait for the **sensor status to be green**, as shown in Figure 2.

Mocap control bar



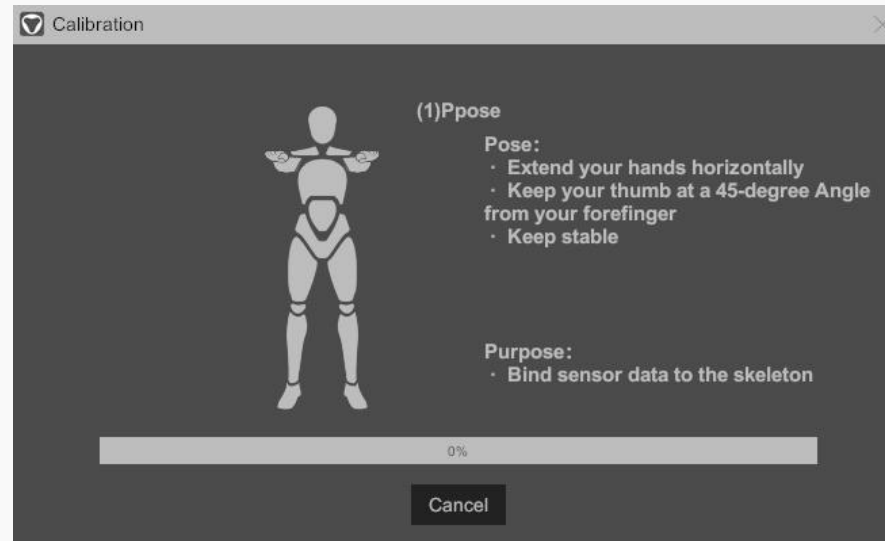
► Connecting mHandPro can be used with HTC or Oculus devices, as shown in Figure ① and Figure ②

Mocap control bar



► Must be calibrated before use, follow the prompts when calibrating, as shown in Fig. ① to Fig. ④

P_Pose Calibration

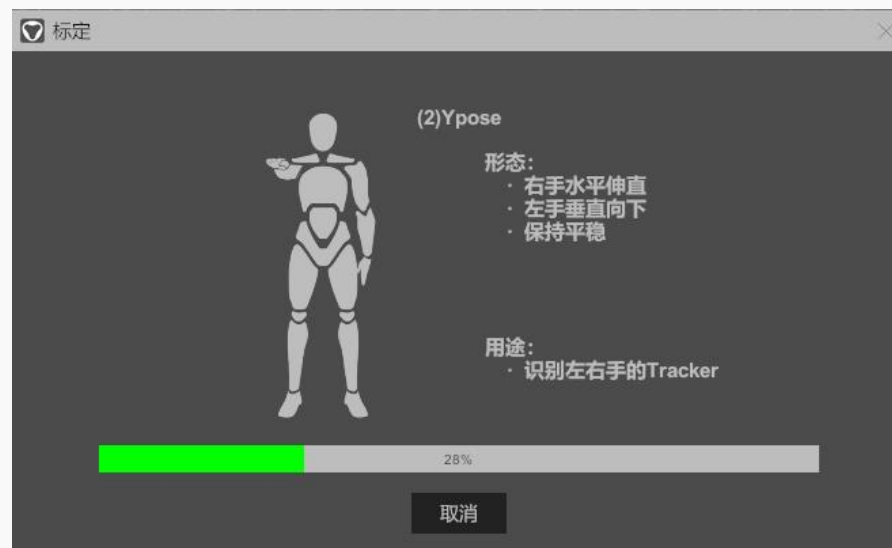


P_pose
calibration

- ▶ Raise both hands **naturally straight up and flat across the chest**, with the distance between the palms of the hands shoulder-width apart
- ▶ Hands **parallel, palms, small arms and large arms** in the same straight line
- ▶ Hands palms facing down, thumbs and index fingers at 60°, remaining four fingers together and straight
- ▶ When calibrating, keep your body still and do not move, otherwise you will not be calibrated.

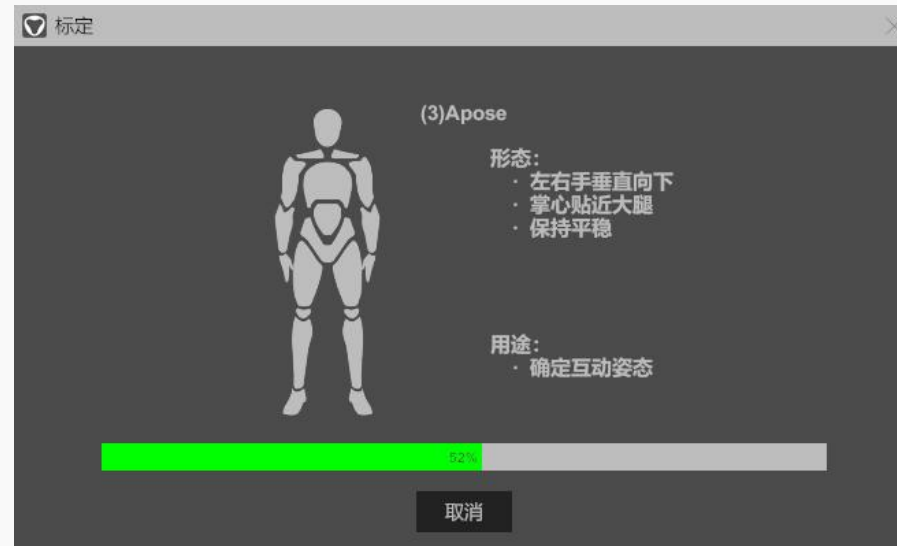
33% or 66% are caused by hands not being tensed at rest or wrong arm dressing

Y_Pose Calibration



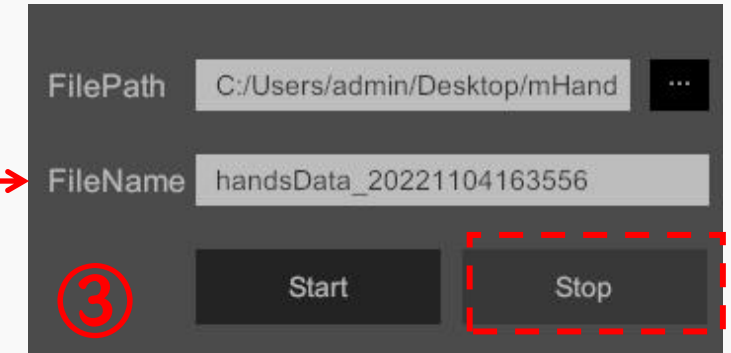
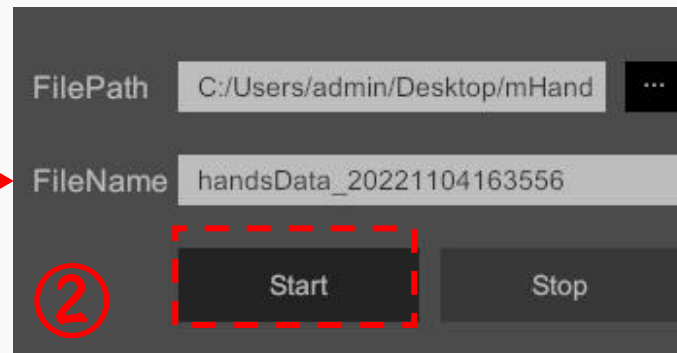
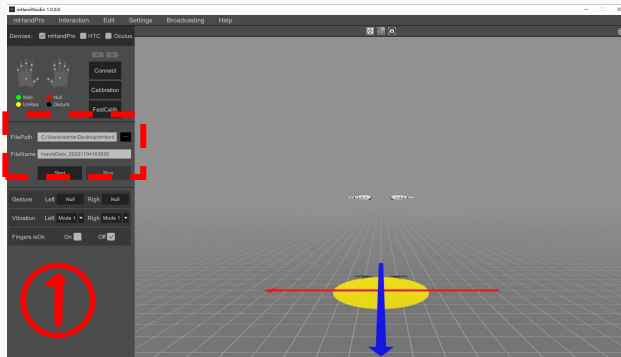
- ▶ Stand up straight, left hand hanging naturally, right hand lifted straight up and flat over the chest
- ▶ Keep the palm of the left hand close to the thigh, the palm of the right hand facing down, with the thumb and index finger at 60° and the remaining four fingers together and straight.
- ▶ When calibrating, keep the body still and do not move, otherwise the calibration will not pass, **0% is due to the small height difference between the two hands.**

A_Pose Calibration



- ▶ Stand up straight with your body, left and right hands hanging down naturally
- ▶ Hold the palms of the left and right hands close to the thighs, with the thumb and index finger at 45° and the remaining four fingers together and straight.
- ▶ When calibrating, keep your body still and do not move, otherwise you will not be calibrated, and **0%** is due to the large difference in height between the two hands.

Data logging control bar

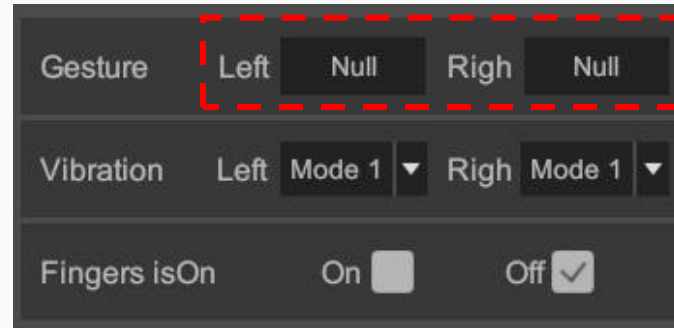


Data
record

► After setting the storage path and file name, then click the **"Start Record"** button to start recording the action data, as shown in Figure ②

► After recording the action data, click the **"End Record"** button to save the data file, as shown in Figure ③.

Mocap parameter setting field



Gesture Recognition

mHandPro's built-in gesture type recognition

Gesture Recognition

- ▶ Left-hand gestures: Eleven built-in gesture recognition types
- ▶ Right-hand gestures: Eleven built-in gesture recognition types

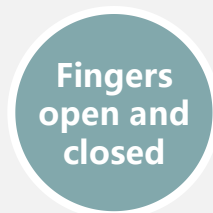
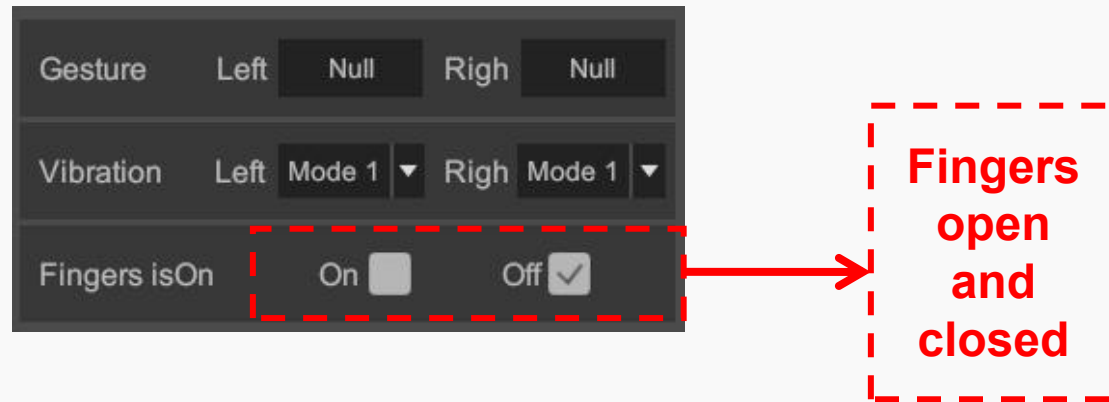
Mocap parameter setting field



Vibration
mode

- ▶ Mode 1: No vibration effect of the glove
- ▶ Mode 2-8: 7 vibration effects of the glove

Mocap parameter setting field



- **Finger tension:** Whether to open the lateral dimension of the finger according to the usage scenario
- **Adjustment parameters:** On, Off

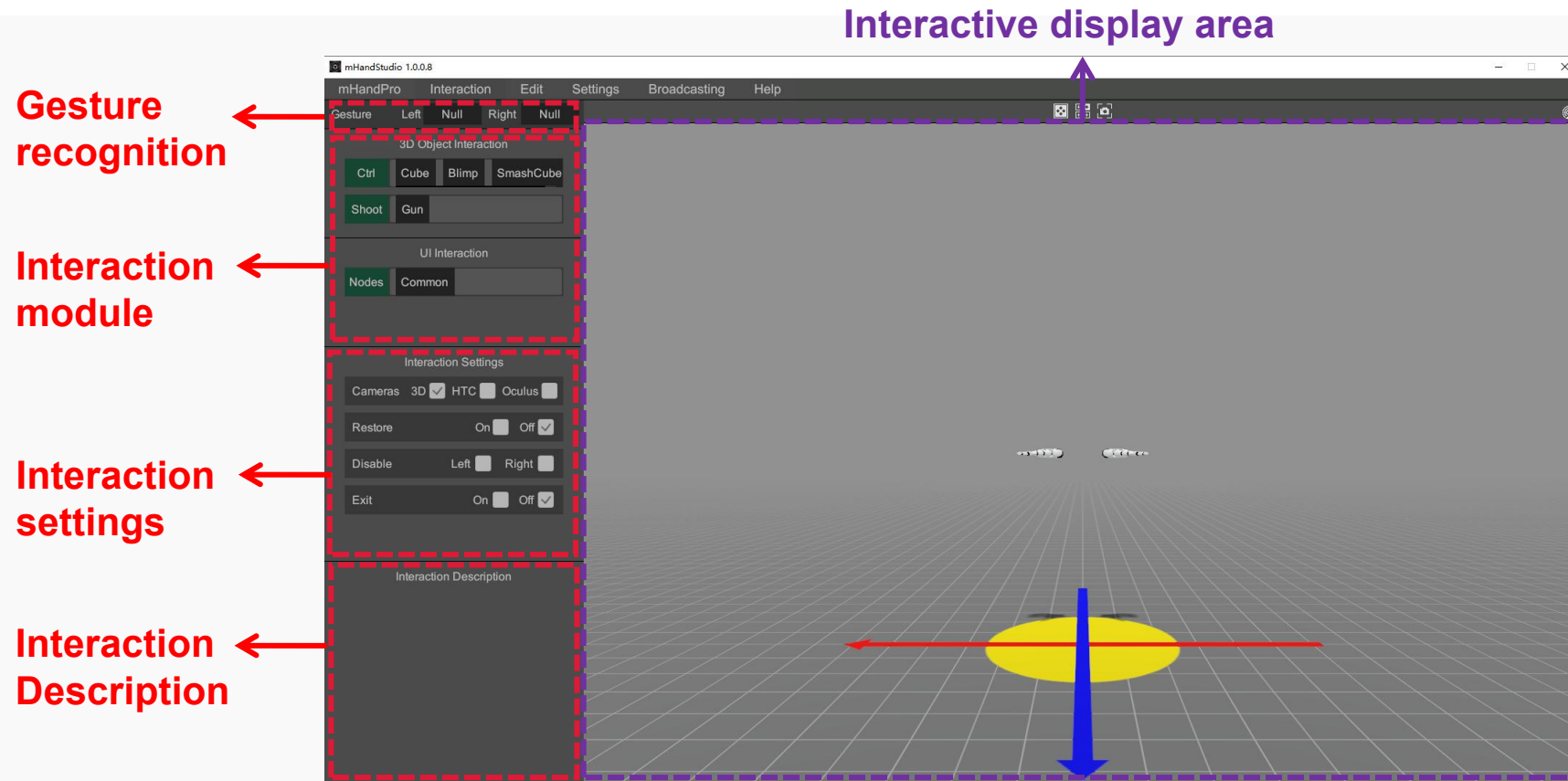
② Interactive menu function explanation



Interaction interface
composition



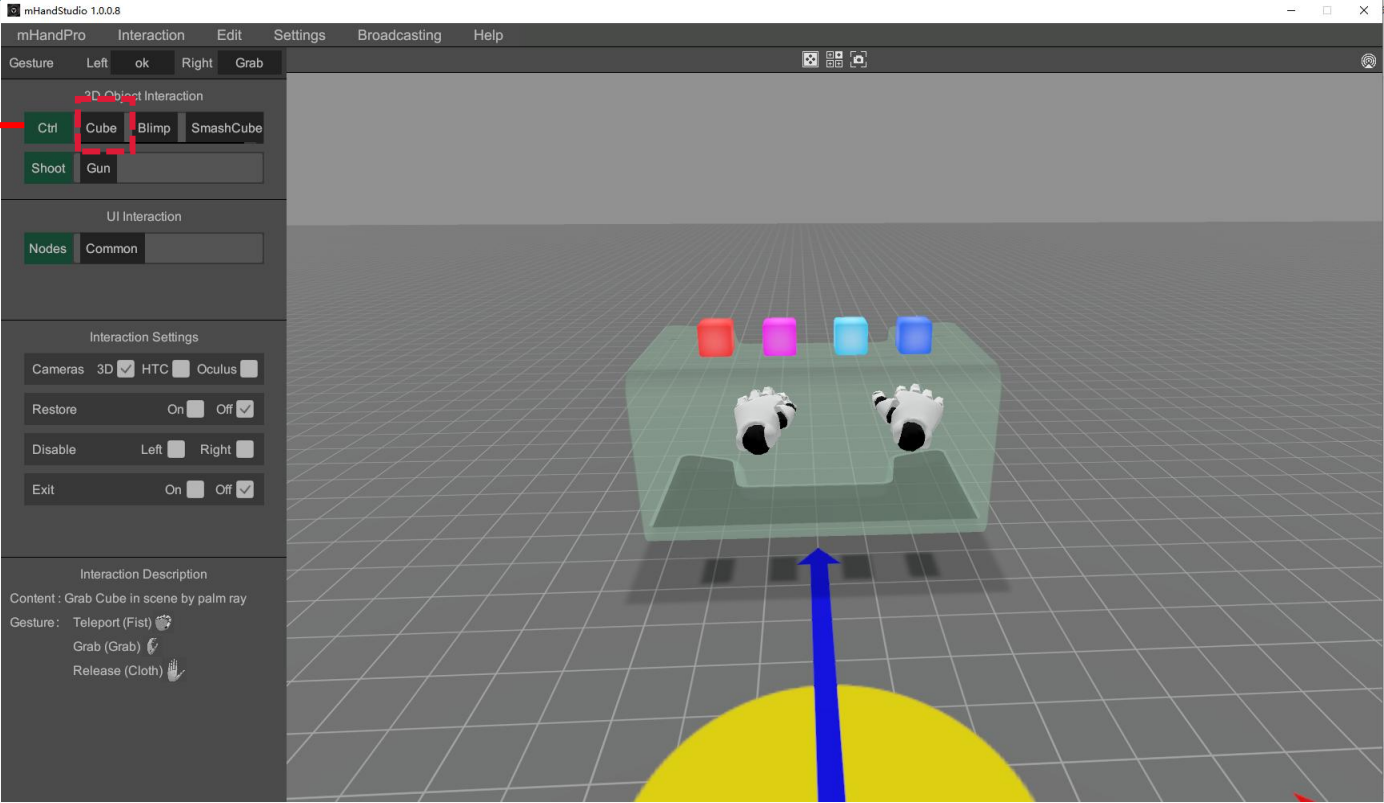
Interactive menu
functions



- ▶ Click the "Interaction" menu through the menu bar to enter the motion capture window.
- ▶ The motion capture window consists of five parts: **gesture recognition, interaction module, interaction settings, interaction description, and interaction display area.**

Cube Interaction

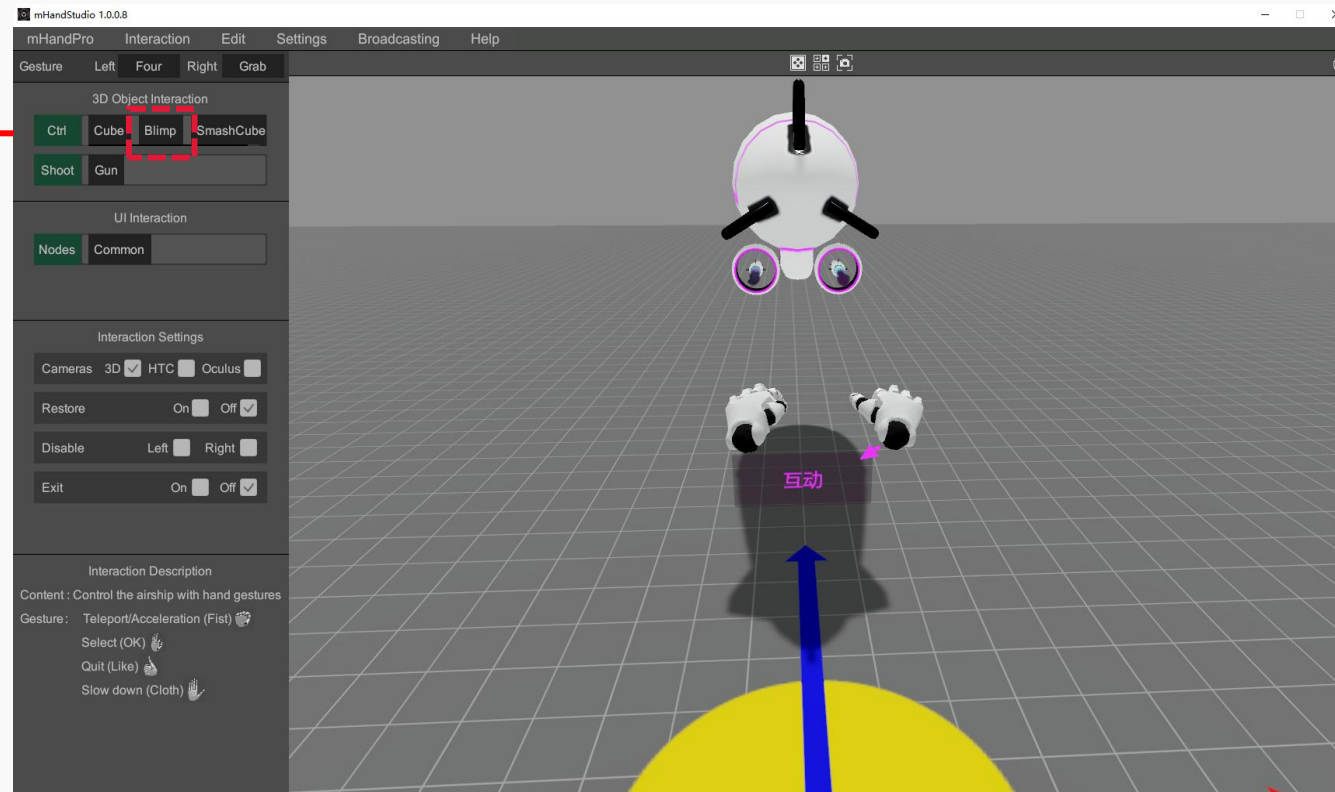
Cube control
Interaction



- ▶ Double-click: Cube in the 3D object interaction control bar to enter the corresponding scene
- ▶ Interaction content: Grab the Cube in the scene by palm ray
- ▶ Control gestures: **Transient (clench fist), Grasp (grab), Release (open)**

Airship Interaction

Airship Control Interaction

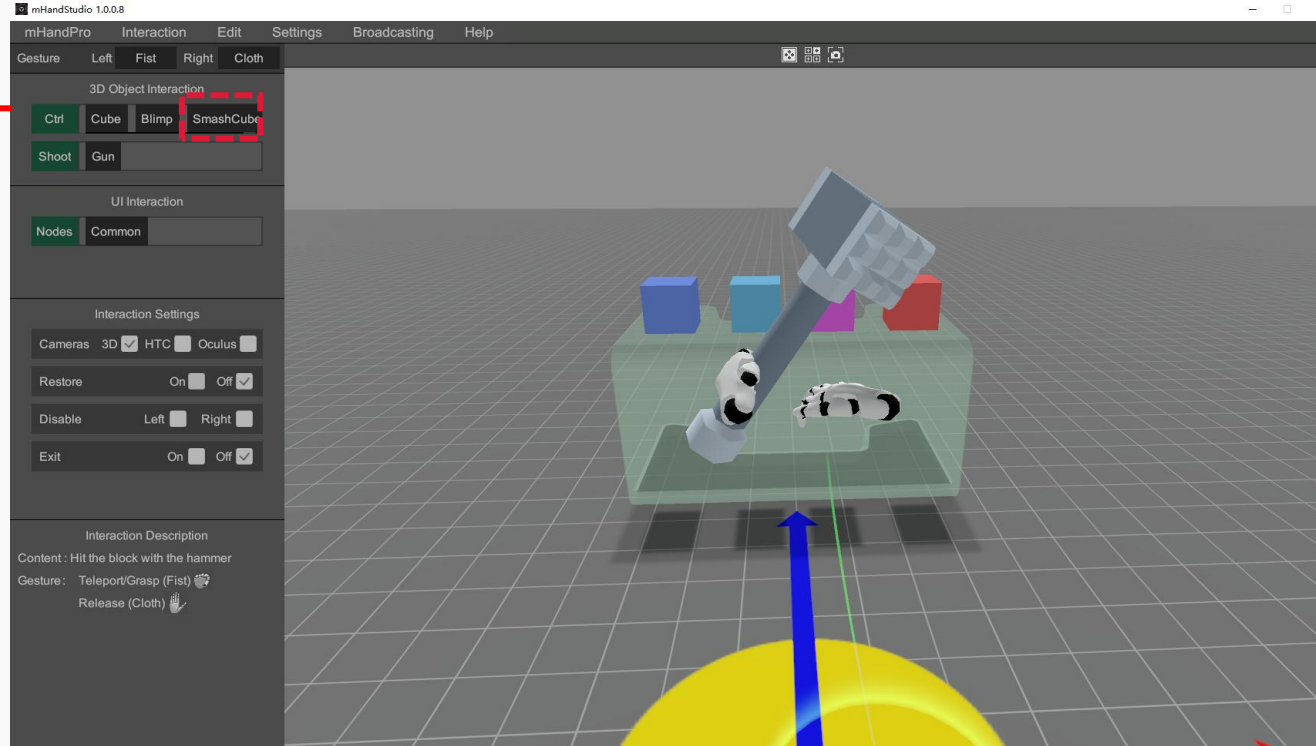


Airship Interaction

- ▶ Double click on the 3D object interaction control bar: blimp to enter the corresponding scene
- ▶ Interaction content: Controlling the blimp by gestures
- ▶ Control gestures: **Instant acceleration (fist clenched), selection (OK), exit (tap), deceleration (open)**

Smash Cube Interaction

Smash Cube
control
interaction

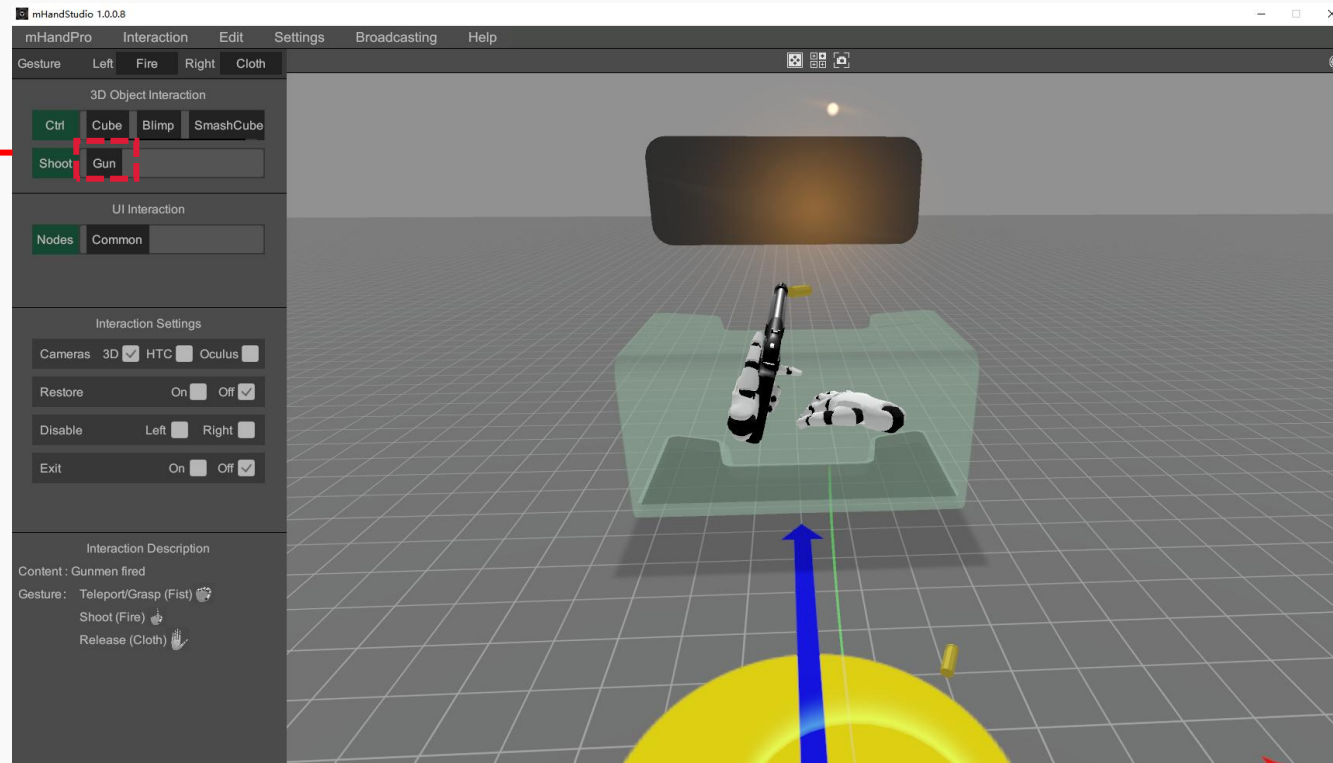


Smash Cube
Interaction

- ▶ Double-click on the 3D object interaction control bar: Smash the cube to enter the corresponding scene
- ▶ Interaction content: Smashing a cube with a hammer in your hand
- ▶ Control gestures: **Teleport/grab (clench fist), release (open)**

Pistol shooting interaction

Pistol shooting interaction

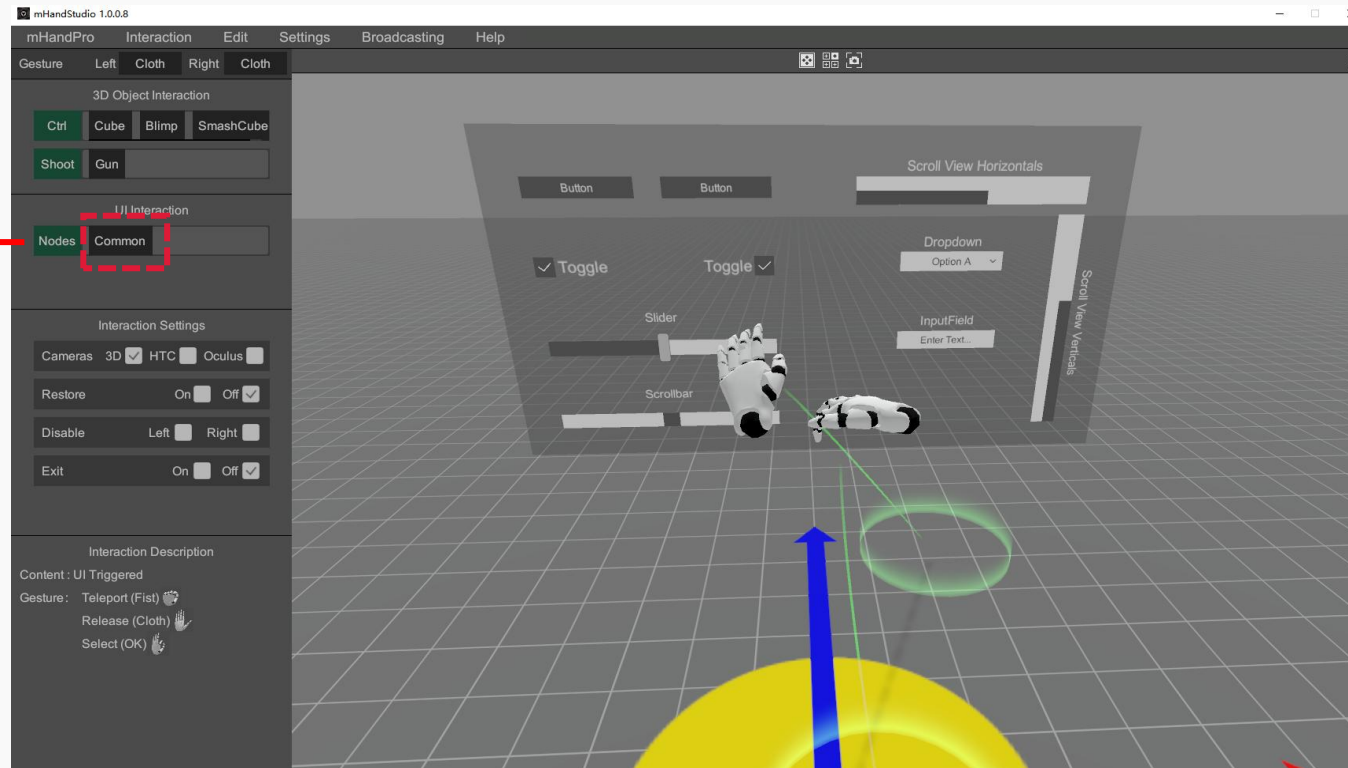


Shooting interaction

- ▶ Double-click the 3D object interaction function in the shooting bar: Pistol to enter the corresponding scene
- ▶ Interaction content: Holding a gun and firing
- ▶ Control gestures: **Instant/Grab (clench fist), Fire (grab), Release (open)**

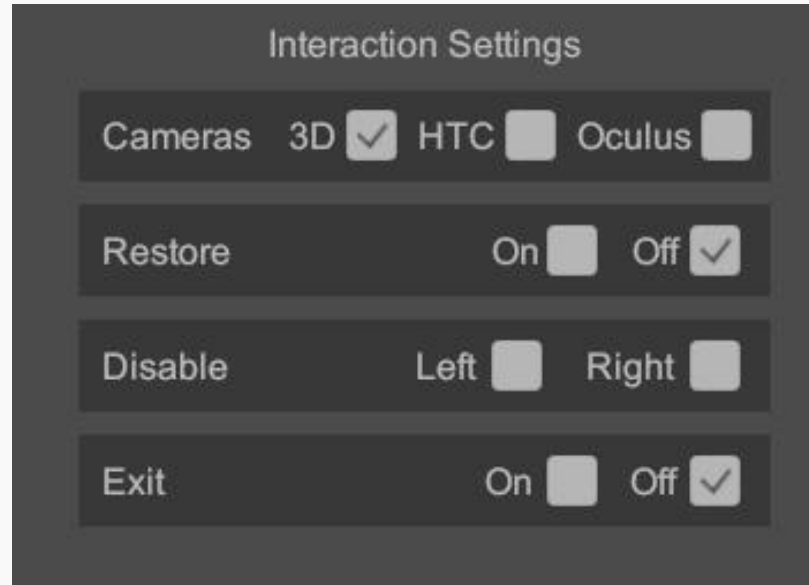
UI interaction

Common Node
Interaction ←



- Click: Commonly used in the UI interaction node bar to enter the corresponding scene
- Interaction content: UI trigger
- Related gestures: **Teleport (fist clenched), Release (open), Click (OK)**

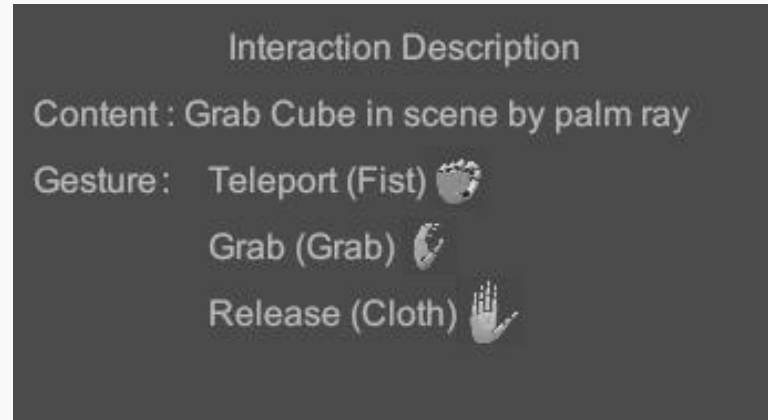
Interaction Settings



Interaction settings

- ▶ Interaction settings consist of 4 parts: **camera mode, restore initial state, disable interaction, and exit interaction**
- ▶ **Camera mode:** Switch different modes for interaction function
- ▶ **Restore initial state:** restore the current state to the initial state
- ▶ **Disable interaction:** Restrict the left/right hand posture for interaction
- ▶ **Exit interaction:** Close the current interaction scene

Interaction Settings



Interaction settings

- ▶ Interaction descriptions consist of 2 parts: **interaction content and related gestures**
- ▶ Interaction content: The operation content that can be achieved by the current interaction scene
- ▶ Related gestures: The specific gestures used to achieve the operation in the current interaction scene

③ Edit menu function explanation

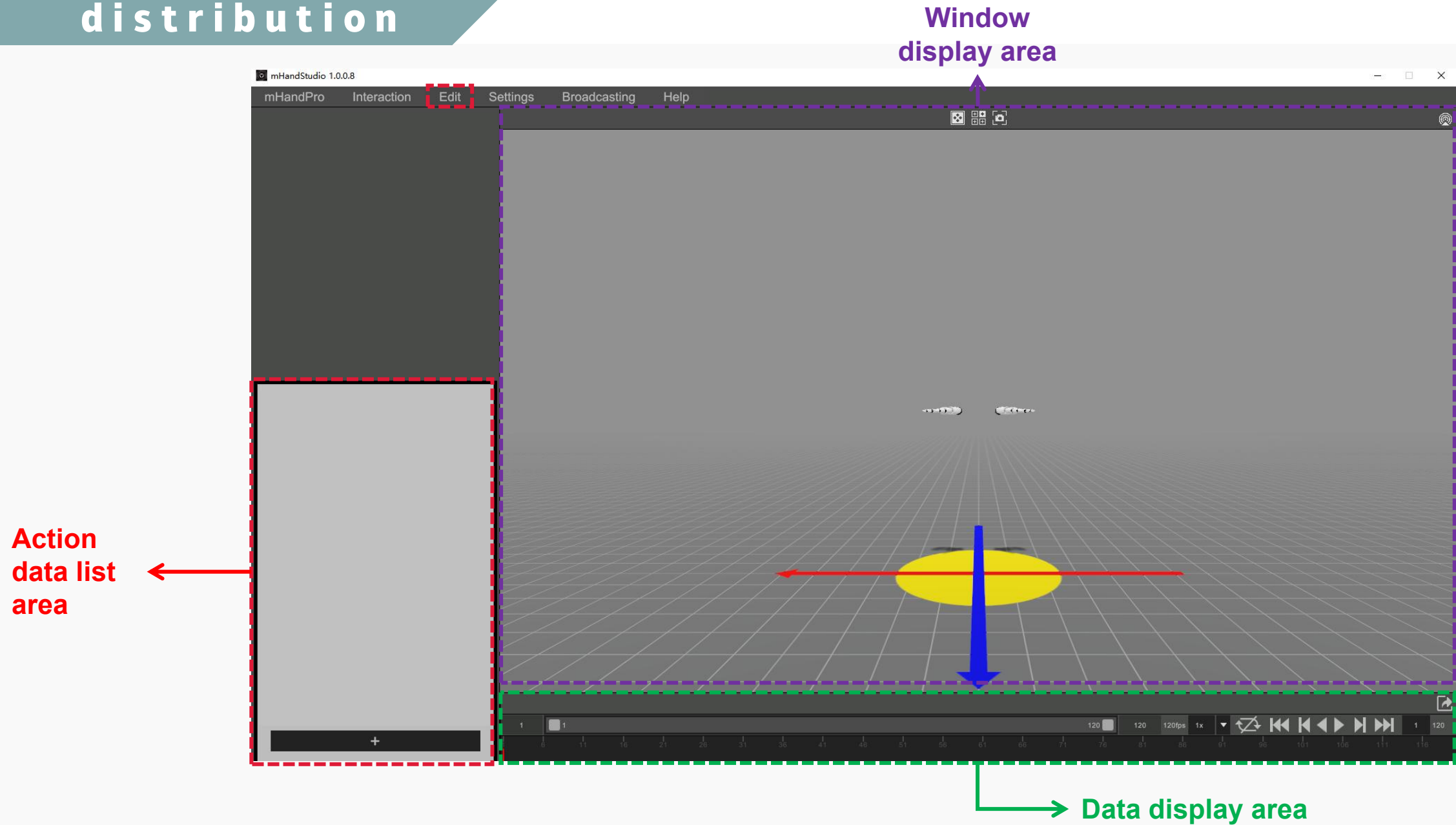


Editing interface
composition

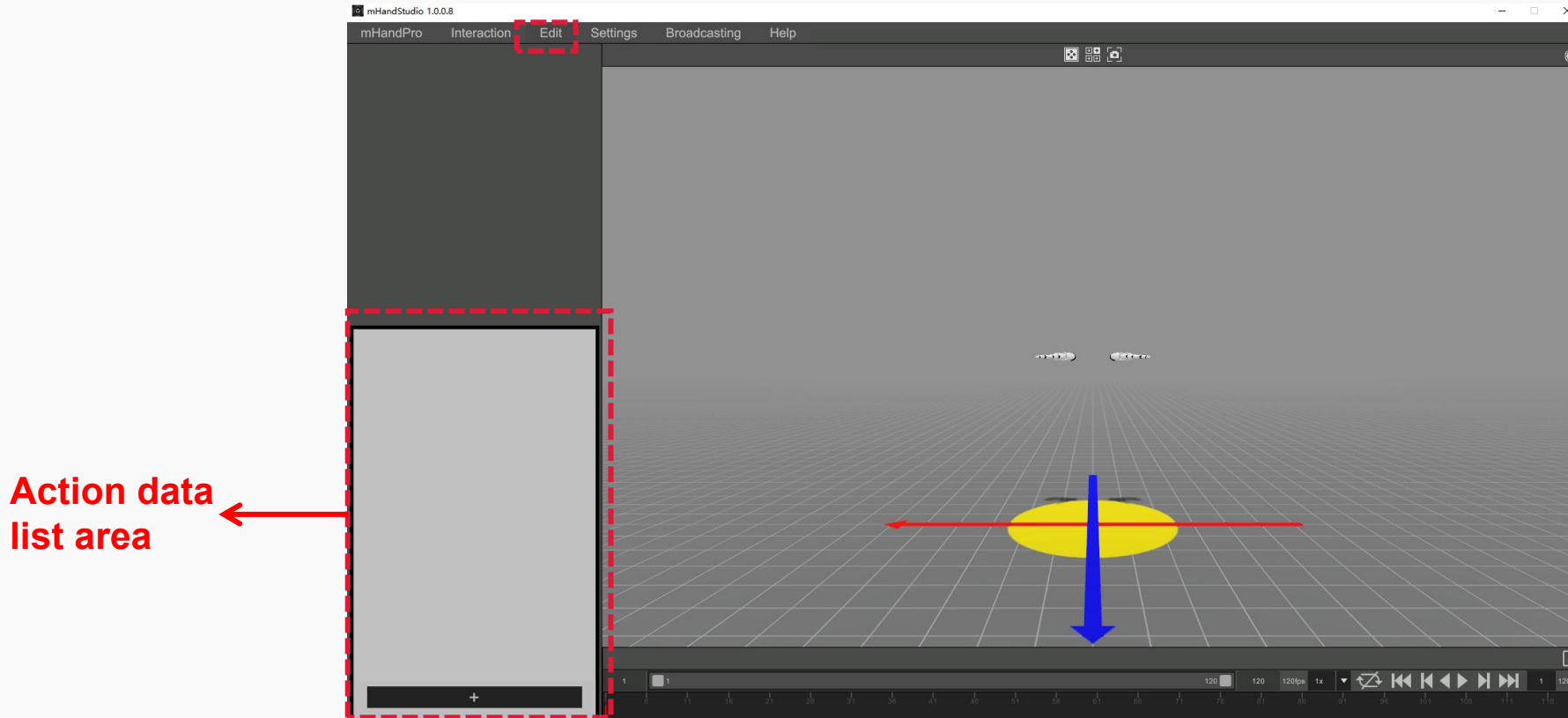


Edit menu function

Editing interface distribution



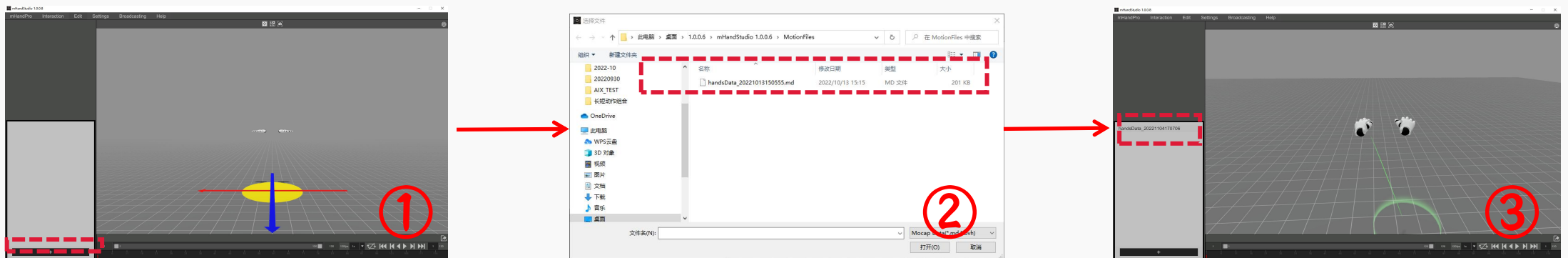
Action data list area



Action data

- **Action data list: Management for recorded data**
Data can be added and imported, data can be viewed and played back, and data can be deleted.

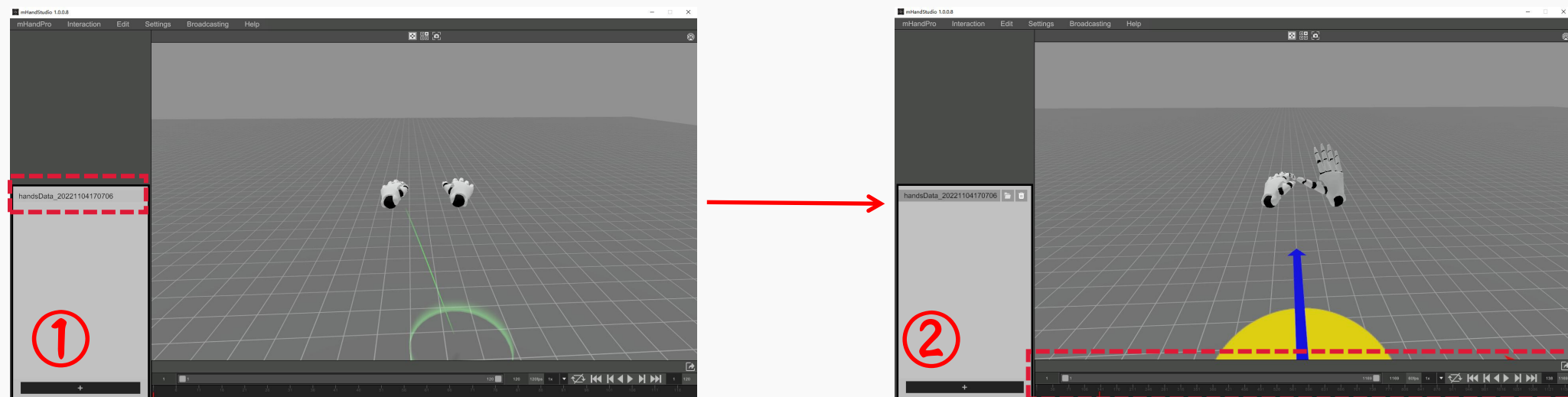
Action data import



Data import

- ▶ Click the Add button in the Action Data list, as shown in Figure ①
- ▶ Select the action data file to be imported, as shown in Figure ②
- ▶ After importing the action data, the action data will appear in the action data list, as shown in Figure ③

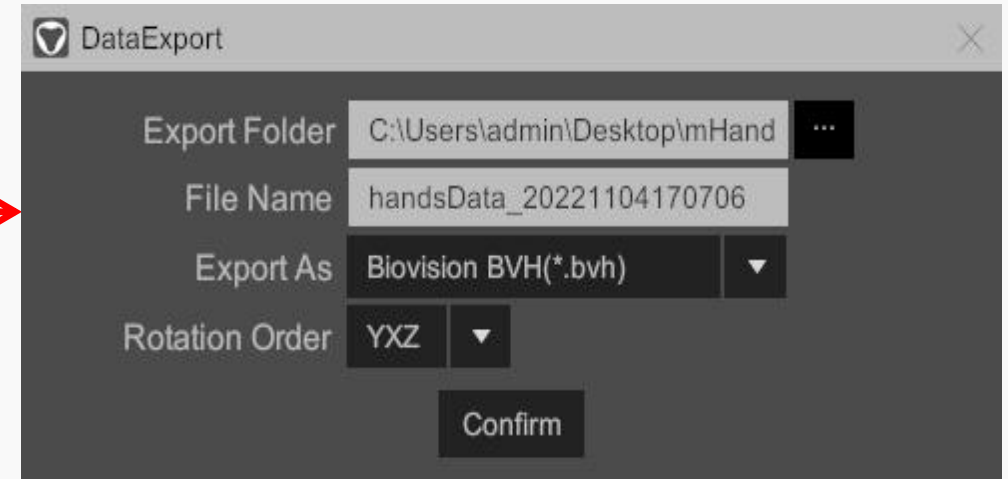
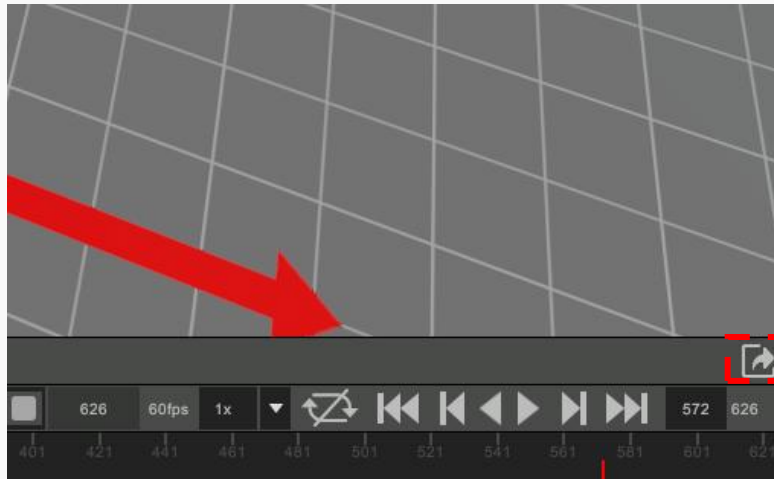
Motion Data Playback



Data Playback

- ▶ Double-click the data in the action data list, as shown in Figure ①, and the data will be loaded into the scene after double-clicking the data
- ▶ Click on the playback control area on the right side to control playback, as shown in Figure ②

Data editing area



► Data export: Set the export file output folder and file name, set the file export type and rotation order to export data files.

④ Settings menu function explanation

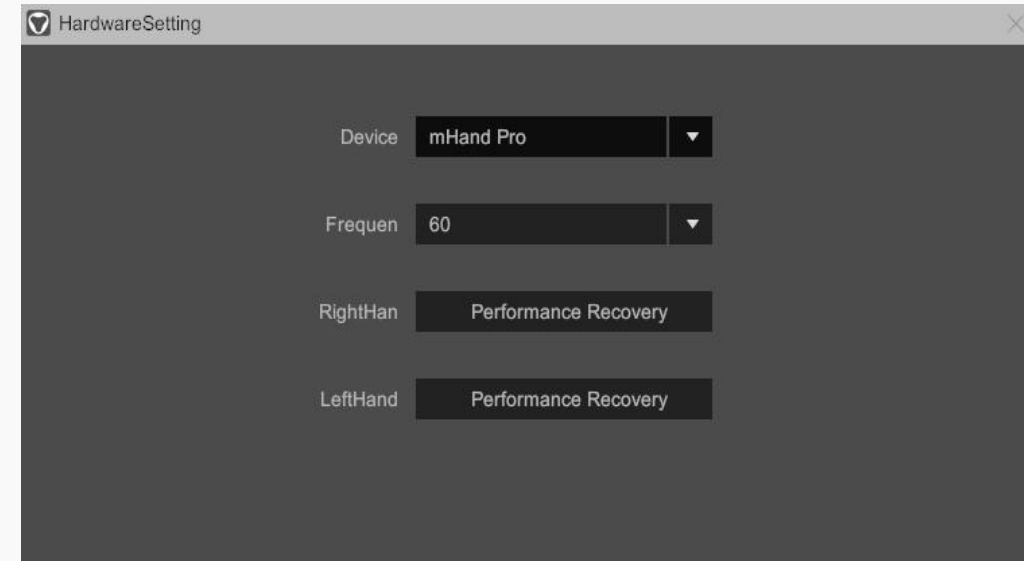
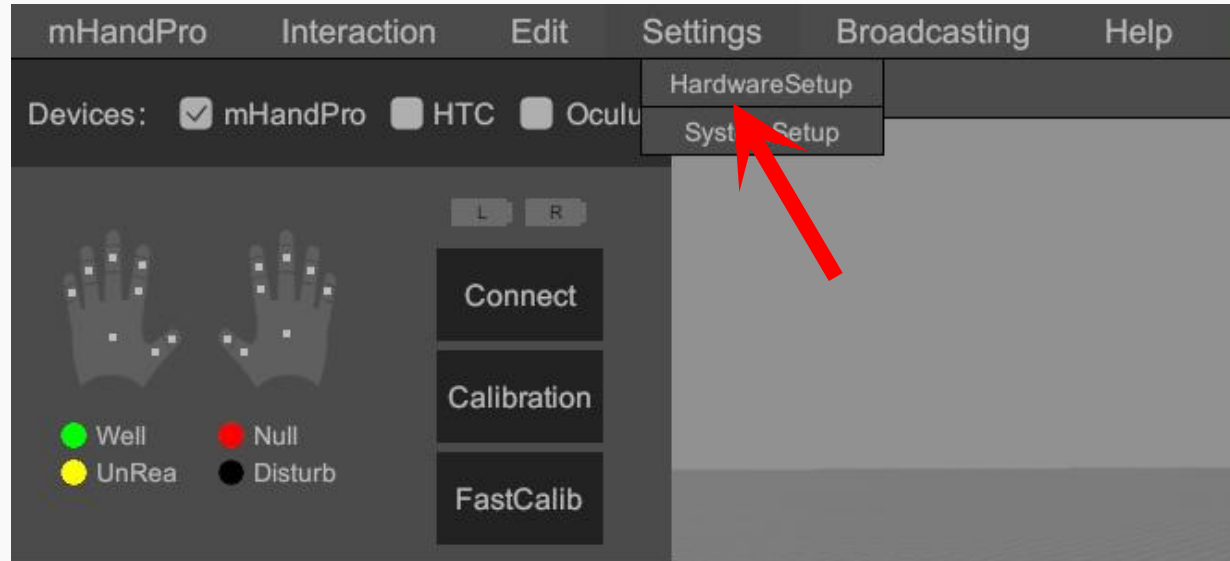


Hardware Settings



System Settings

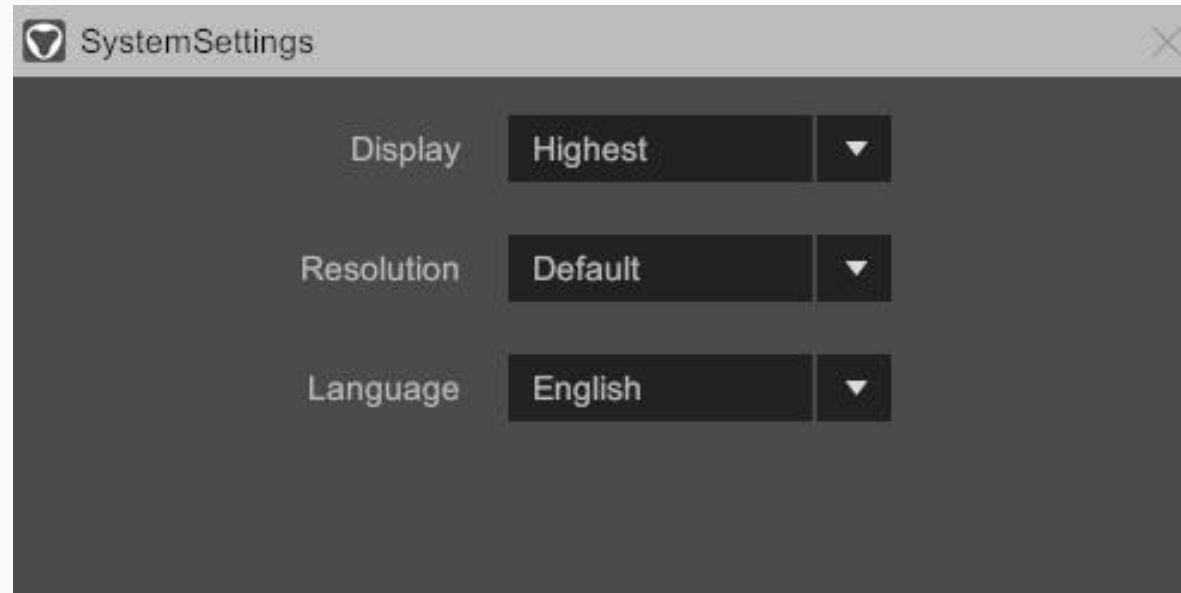
Hardware Settings



Hardware settings

- **Frequency:** The frequency of the glove can be set to: 60, 72, 80, 96
- **Performance repair:** according to the interface prompts and tutorials, magnetic calibration is carried out strictly in accordance with the specifications for **carrying out deep magnetic calibration actions**

Hardware Settings



Hardware settings

- ▶ **Display picture quality:** Set the display picture quality of the 3D world
- ▶ **The better the picture quality, the higher the performance requirement for the computer's graphics card**
- ▶ **If the picture quality is too high causing the screen to lag, you can switch to a poorer quality**
- ▶ **Resolution:** switch between full screen/small screen

⑤ Broadcast menu function explanation

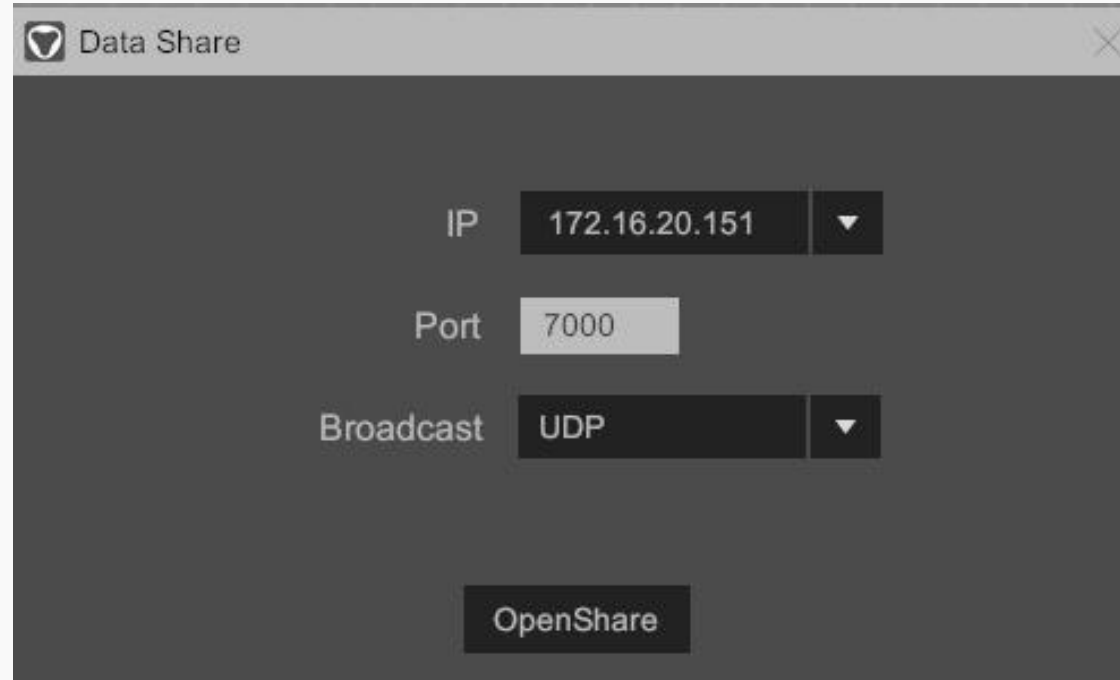


Data Broadcast IP



Data Broadcast Port

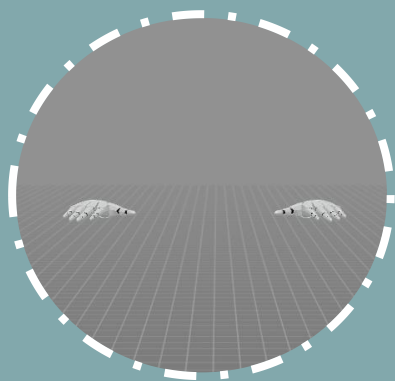
Data Broadcasting



The screenshot shows a window titled "Data Share" with a close button in the top right corner. Inside the window, there are three configuration fields: "IP" with a dropdown menu showing "172.16.20.151", "Port" with a text input field containing "7000", and "Broadcast" with a dropdown menu showing "UDP". Below these fields is a button labeled "OpenShare".

Data
Broadcasting

► Data broadcast: Set IP and port to transmit data via UDP protocol



03

Frequently Asked Questions



mHandPro Studio common problems and solutions

Frequently Asked Questions

Q: the effect of the model on the software in real time lagging, not smooth

Reason: ① the distance between the receiver and the controller is too far; ② the signal is shielded by interference; ③ driver installation does not match; ④ computer hardware configuration does not support.

Solution: ① the receiver and the controller as close as possible and recommended within 20 meters and no people, walls or other objects shielding; ② set the frame rate to 96Hz in the settings interface; ③ reinstall the driver according to the computer system; ④ replace a computer to use.

Q: Receiver and equipment connected successfully, but can not connect to the software

Reason: The driver is damaged or the computer does not recognize the device.

Program: the receiver plugged into another USB port of the computer, if the replacement of the USB port still can not be used, check the device manager in the COM port driver is normal. If the driver is abnormal, please uninstall the original driver and then update or install the driver.

Q: receiver and controller can not automatically pair connected

Reason: The device is not enough power; first turn on the device and then connect the receiver to cause Bluetooth can not be paired.

Solution: Charge the device; reboot the device when the power is sufficient, then the controller and the device will be automatically connected.

Frequently Asked Questions

Q: Straighten the arm, presenting the left and right hand long and short hands

Reason: If Tracker2.0 is mixed with 3.0, its positioning accuracy is not consistent

Solution: Recommend using the same version of Tracker

Q: After using for a period of time, it is found that the limbs are not coordinated

Reason: Normal error caused by relatively complex magnetic field environment

Solution: Re-A_pose calibration.

Q: Just after calibration, use found limb incongruity

Reason: The left and right limbs may be worn backwards, or the environmental magnetic interference is serious, or the wearing position has been adjusted, or the sensor is magnetized.

Solution: Check whether the left and right limbs are worn backwards, whether the wearing position has been adjusted, and check the environmental magnetic interference. If the phenomenon still occurs after multiple calibrations, you need to consider deep magnetic calibration.

Thank
you



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