aSee Glasses

眼镜式眼动仪快速使用指南
Mobile Eye Tracking Add-on Quick Start

一、招募参试者

在考虑招募参试者人数与特征用户画像的同时，考虑到眼动实验的特殊性，需要参试者尽可能满足以下情况：

1. 参试者不可以佩戴自己的眼镜；
2. 参试者无眼科疾病，包括弱视，斜视，高度数散光，无眼科手术史；
3. 参试者在实验当天不宜佩戴过于浓密的假睫毛或涂抹过于厚重的睫毛膏，尽量不要招募种植过睫毛的参试者；
4. 参试者的眼镜在直视前方时可以看到完整的虹膜，上眼睑不会遮蔽瞳孔；

因为眼动实验的特殊性，需要提前告知参试者实验人员会获取对方的眼动数据并用于数据分析与可视化呈现，同时还需要签署相关协议。

Recruit participants:

Considering the number of participants, the characteristic user portrait and the particularity of eye movement project, participants are required to satisfy the following situations as much as possible:

1. The participants are not recommended to wear their own glasses;

2. The participants had no ophthalmologic disease, including amblyopia, strabismus, high astigmatism and no history of ophthalmologic surgery;

3. The participants should not wear too thick false eyelashes or apply too thick mascara on the test day, and try not to recruit the participants who have grown eyelashes;

4. The full iris can be seen when the participant looking directly ahead, and the upper eyelid will not cover the pupil;

Because of the particularity of eye movement test, it is necessary to inform the participants in advance and sign the agreement that their personal eye movement data can be obtained for data analysis and visual presentation.

二、aSee Glasses 眼镜式眼动仪配件拆卸技巧

aSee Glasses mobile eye tracking add-on disassembly tips

1. 眼镜架拆卸：按下拆卸开关，同时取下眼镜架。

Spectacle frame disassembly: Press the remove button and remove the frames.
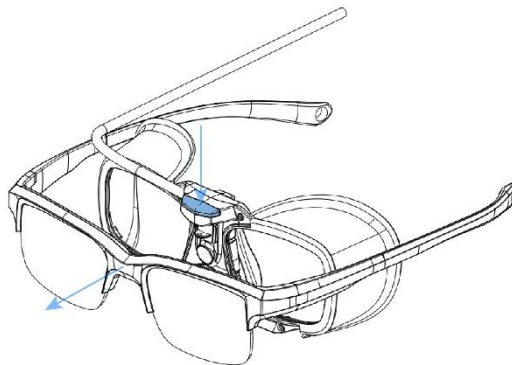
2. 镜片拆卸：保持镜架外侧镜片不动，从镜架内侧移除镜片。安装时要先从镜架外侧安装。

Lens disassembly: Keep the outer side of the frame still and remove the lens from the inner side of the frame. Install from the outside of the frame first.

3. 遮光罩拆卸：从眼动模组边缘逐渐扣开卡口，然后取下遮光罩。

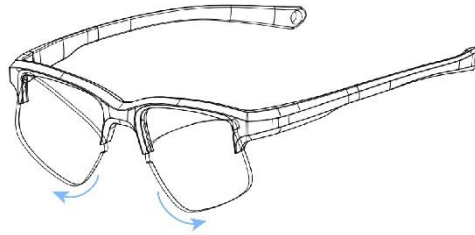IR Shade disassembly: Gradually open the bayonet from the edge of the eye tracking module, then remove the IR Shade.
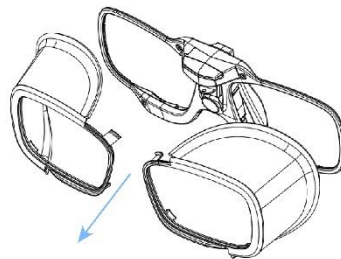
4. 鼻托拆卸：向下推动鼻托，将其取下。

Nose rest disassembly: Push the nose rest down and remove it.
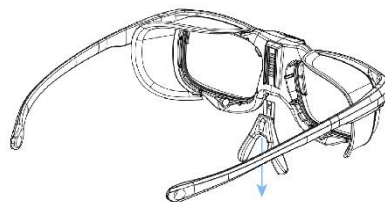
三、为参试者提前准备好 aSee Glasses

1. 如果 aSee Glasses 眼镜没有安装遮光罩，先把遮光罩安装好（强光环境需要安装遮光罩）；
2. 协助参试者把眼镜式眼动仪戴在头上；
3. 根据参试者个人情况使用合适的鼻托；
4. 调节眼镜式眼动仪的绑带，使得其固定在参试者的头上不会掉落；
5. 如果需要手机，现在可以将眼镜式眼动仪连接到手机上，如果不需要，则将眼镜式眼动仪连接到电脑上；
6. 让参试者转动头部，做点头动作，以确保带上眼镜式眼动仪后，参试者没有感觉到不舒服。如果参试者在录制过程中移动了眼镜式眼动仪，建议重新进行校准并告诉他不要移动眼镜式眼动仪；

Preparing aSee Glasses for Participants：

1. If the IR shade is not installed on aSee Glasses, install the IR shade first (it is required for high-light environment);

2. Place aSee Glasses eye tracker on the participant's head as you would do so with a normal pair of glasses.

3. Please use the appropriate sized nose rest if required.

4. Tighten the head strap to make aSee Glasses firmly against the participant's head.

5. If you need Recording Assistant, you can connect aSee Glasses to the recording assistant. If you don't, you can connect aSee Glasses to your computer.

6. The participant should not feel any discomfort when turning his or her head, nodding, or looking around. If he or she tries to move the position of the aSee Glasses during the recording after calibration, it is recommended to recalibrate and give him or her instructions to refrain from moving the aSee Glasses.

四、PC 端录制实验

Core Studio 是运行在 PC 端的分析软件，在开始录制之前，你需要将这个软件根据安装提示安装在电脑上。

在 PC 端使用 Core Studio 进行实验录制包括以下几个步骤：

1. 为参试者带上眼镜式眼动仪；
2. 将 aSee Glasses 眼动仪连接到电脑上；
3. 插入加密狗；
4. 点击运行 Core Studio；
5. 输入对应 GUID 的密钥；
6. 添加一个新的工程，可以是建立一个新工程，也可以是打开一个已有工程；
7. 选择"使用本地录制"连接方式；
8. 校准（未校准时会使用默认校准系数，建议校准后再录制实验）；
9. 点击录制按钮，开始录制实验；
10. 结束录制；
11. 接下来可以重新录制新的实验，或查看已有实验记录的测试分析结果。

Record experiments on PC

Installing Core Studio: Core Studio is the eye tracking controller software that runs on the user PC. Before recording, you should set up the software by following the on-screen prompts and instructions.

The recording process using aSee Glasses on PC is composed of the following steps:

1. Place the aSee Glasses eye tracker on the participant;
2. Connect aSee Glasses eye tracker to the PC;
3. Insert the Dongle into the PC;
4. Start running Core Studio;
5. Enter the key;
6. Add a project and test: run a new or saved project;
7. Select "Local Hardware" connection mode;
8. Calibration (use the default calibration coefficient when not calibrated, it is recommended to record the experiment after calibration)
9. Begin recording experiment;
10. When finished, stop recording.
11. Then you can run a new recording or check the results of the recordings under the current test.

关于校准

校准的目的是在使用 aSee Glasses 眼动仪时，建立眼图和三维注视点之间的对应关系。校准还建立了在空间中眼睛运动的平面。由于注视点和眼图的对应关系很大程度上依赖于整个系统的设置，并且不同的参试者也会有所区别，所以建议在每次测试前都需要对参试者进行校准。建议参试者可以先佩戴 aSee Glasses 眼动仪一段时间后，在适应了佩戴眼动仪的感觉后再进行校准。 校准的时间通常不会超过一分钟，建议实验人员可以一边讲解 aSee Glasses 的功能，一边为参试者校准。

About Calibration

Calibrating is the process whereby the aSee Glasses eye tracker establishes the relationship between the position of the eye in the camera view and the gaze point in space. Calibration also establishes the plane in space where eye movements are rendered. Since this relationship strongly depends on the overall system setup and also varies between participants, a reference measurement called Calibration is recommended before each project and each participant. It is recommended where possible that the participant is able to wear the aSee Glasses eye tracker for a short time to get used to how they feel. This time does not have to be longer than a minute or so. A good time to allow this period to occur is when explaining the experiment or how the aSee Glasses function.

PC 端创建校准

1. 选择校准模式;
2. 单击"校准";
3. 告诉你的参试者看向真实环境中第一个已知的位置;
4. 如图所示，你需要做的是在实时视图窗口中单击和真实环境对应的已知位置（建议选择如下图所示三个相对位置的点）;
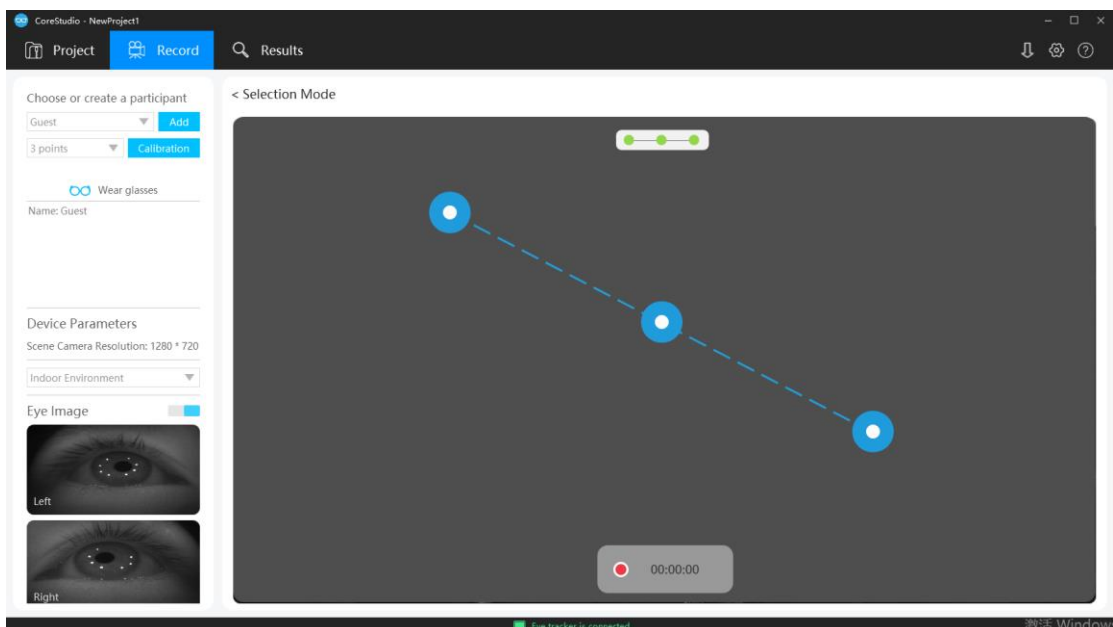
5. 告诉你的参试者看向真实环境中第二个已知的位置;
6. 在实时视图窗口中单击和真实环境对应的已知位置;
7. 在完成校准过程之前，重复上述步骤;
8. 验证校准。让你的参试者看一下你指定的一些物品，并观察在实时视图窗口中注视点的

移动，以确定注视点计算是否准确。如果校准成功了，注视点应该移动到被指定的物体上。如果注视点距离指定物体偏差很大，建议重新进行校准；

Creating calibration on PC

1. Choose the calibration mode;
2. Click "Calibration";
3. Tell your participant to look at the first known location in the real environment;
4. Click the corresponding known position on the live view window with a single click(It is recommended to select three relative positions as shown in the figure above);
5. Tell your participant to look at the second known location in the real environment;
6. Click the corresponding known position on the live view window with a single click;
7. Repeat the same procedures above until you have finished the calibration procedure.
8. Verify the calibration. Ask your participant to look at a few objects suggested by you and observe gaze cursor movement in the live view window to determine whether the eye tracking data is accurate. If calibration has been successful, the gaze cursor should move to the identified object. If the gaze cursor does not move to the corresponding object, then another calibration should be completed.

五、手机端录制实验

在手机端使用 aSee Glasses 进行实验录制包括以下几个步骤：

1. 为参试者带上 aSee Glasses 眼动仪；
2. 将 aSee Glasses 眼动仪连接到手机助手上；
3. 在手机助手上点击运行 Core Studio；
4. 添加一个新的工程，可以是建立一个新工程，也可以是打开一个已有工程；
5. 开始录制流程：
   1) 创建或选择一个参试者；
   2) 编辑参试者属性；
   3) 使用一点或三点校准方式进行校准；
   4) 开始录制.
6. 结束时停止实验录制；
7. 选择：
   a) 开始一个新的记录；
   b) 开始一个新的工程；
   c) 将工程导入 PC 端的 Core Studio。.

Record experiments on Recording Assistant

The recording process using aSee Glasses on the Recording Assistant is composed of the following steps:

1. Place the aSee Glasses eye tracker on the participant;
2. Connect aSee Glasses eye tracker to the Recording Assistant;
3. Start running Core Studio on Recording Assistant;
4. Select a project:
   a) Create a new project;
   b) Run a saved project.
5. Begin the recording process:
   1) Create/select a participant;

   2)   Edit participant properties;

   3)   Calibrate using 1-point or 3-point mode;

   4)   Start recording.

6.   When finished, stop recording;

7.   Then you can choose to:

   a)   Run a new recording;

   b)   Run a new project;

   c)   Load data into Core Studio on PC.

手机端创建校准

校准前，先保证眼图位置合适且光斑清晰可见（在录制界面，双指从左侧边缘滑入可查看当前的眼图）。

1.   选择校准模式;

2.   单击"校准";

3.   告诉你的参试者看向真实环境中第一个已知的位置;

4.   在实时视图窗口中双指拖动蓝色圆环移动至和真实环境对应的已知位置，然后点击蓝色圆环。

5.   告诉你的参试者看向真实环境中第二个已知的位置;

6.   在实时视图窗口中拖动蓝色圆环至和真实环境对应的已知位置，然后单击;

7.   在完成校准过程之前，重复上述步骤;

8.   验证校准。让你的参试者看一下你指定的一些物品，并观察在实时视图窗口中注视点的移动，以确定注视点计算是否准确。如果校准成功了，注视点应该移动到被指定的物体上。如果注视点距离指定物体偏差很大，建议重新进行校准;

Creating calibration on Recording Assistant

Before calibration, make sure the eye images are in the right position and the bright spots are clearly visible (in the recording interface, slide in from the left edge with double fingers to see the current eye images).

1.   Choose the calibration mode;

2.   Click "Calibration";

3.   Tell your participant to look at the first known location in the real environment;

4.   In the real-time view window, drag the blue circle with two fingers to the known position corresponding to the real environment, and then click the blue circle;

5.   Tell your participant to look at the second known location in the real environment;

6.   Drag the blue circle in the real-time view window to a known location corresponding to the real environment, and then click it;

7.   Repeat the same procedures above until you have finished the calibration procedure.

8.   Verify the calibration. Ask your participant to look at a few objects suggested by you and observe gaze cursor movement in the live view window to determine whether the eye tracking data is accurate. If calibration has been successful, the gaze cursor should move to the identified object. If the gaze cursor does not move to the corresponding object, then another calibration should be completed.

六、导入工程

导入一个工程：

1. 打开<工程>菜单；
2. 点击"工程列表"中的"导入"按钮，打开 Windows 对话框选择工程文件夹，然后导入。
3. 如果您想要导入的工程已经存在，您需要选择合并这两个工程或者把想要的工程作为一个新的工程导入。

加载完成后，您可以在工程列表中看到您导入的工程。

请注意：Core Studio 创建的工程文件结构是：

" C:\Users\username\Documents\CoreStudio\Projects\NewProject1\Resources\Recordings "，导入工程请选择"**NewProject1**"文件夹，然后点击"导入"按钮。

To import a project:

4. Open the menu of <Project>;
5. Click "Import" button in the module of "Project List" to open the Windows dialog box and then select the project file to import.
6. If the project you wish to import already exists, you need to choose to merge the project with the new project or import as a new project.

After loading, you can see the project listed in the Core Studio Project List.

Please note that the project file structure created by Core Studio is:

"C:\Users\username\Documents\CoreStudio\Projects\NewProject1\Resources\Recordings", please select "**NewProject1**" when importing the project, and then click the import button.

七、远程连接

在使用手机助手的时候，如果您想要使用"远程监测"和"远程操作"功能，请参照以下步骤：

1. 为远程连接做准备：
   1) 将 aSee Glasses 眼动仪连接到手机助手上；
   2) 将手机助手连上 WIFI，保证与您的电脑处在统一网络内。
   3) 关闭电脑的防火墙与网络保护。
2. 远程监测：
   1) 在手机助手上点击"运行"，进入录制界面；
   2) 将手机助手上右上角的 IP 地址输入到 PC 端的远程 IP 地址输入框内。
   3) PC 端选择"远程监测"连接模式。
3. 远程操作：
   4) 在手机助手上点击"运行"，进入录制界面；
   5) 将手机助手上右上角的 IP 地址输入到 PC 端的远程 IP 地址输入框内。
   6) PC 端选择"远程操作"连接模式。

If you want to use "Remote Detection" and "Remote Operation" functions while using the Recording Assistant, follow the following procedure:

1. Prepare for remote connection:
   1) Connect aSee Glasses eye tracker to the Recording Assistant;
   2) Connect Recording Assistant to WIFI to make sure it's on the same network as your

computer;

   3) Turn off firewall and network protection on PC.

2. Remote Detection:

   1) Click "Run" to enter the recording interface on the Recording Assistant;

   2) Enter the IP address in the upper right corner of Recording Assistant into the Remote IP Address field on PC;

   3) Select "Remote Detection" connection mode on PC.

3. Remote Operation:

   1) Click "Run" to enter the recording interface on the Recording Assistant;

   2) Enter the IP address in the upper right corner of Recording Assistant into the Remote IP Address field on PC;

   3) Select "Remote Operation" connection mode on PC.