Using Brain Interface to Draw a Hexagon Flower

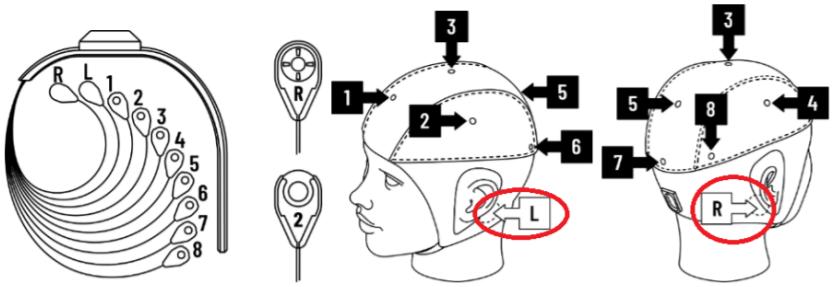
Hostess instructions

Starting the data acquisition and visualization programs

Open the *README.md* file and follow instructions.

Installing the brain interface on user's head

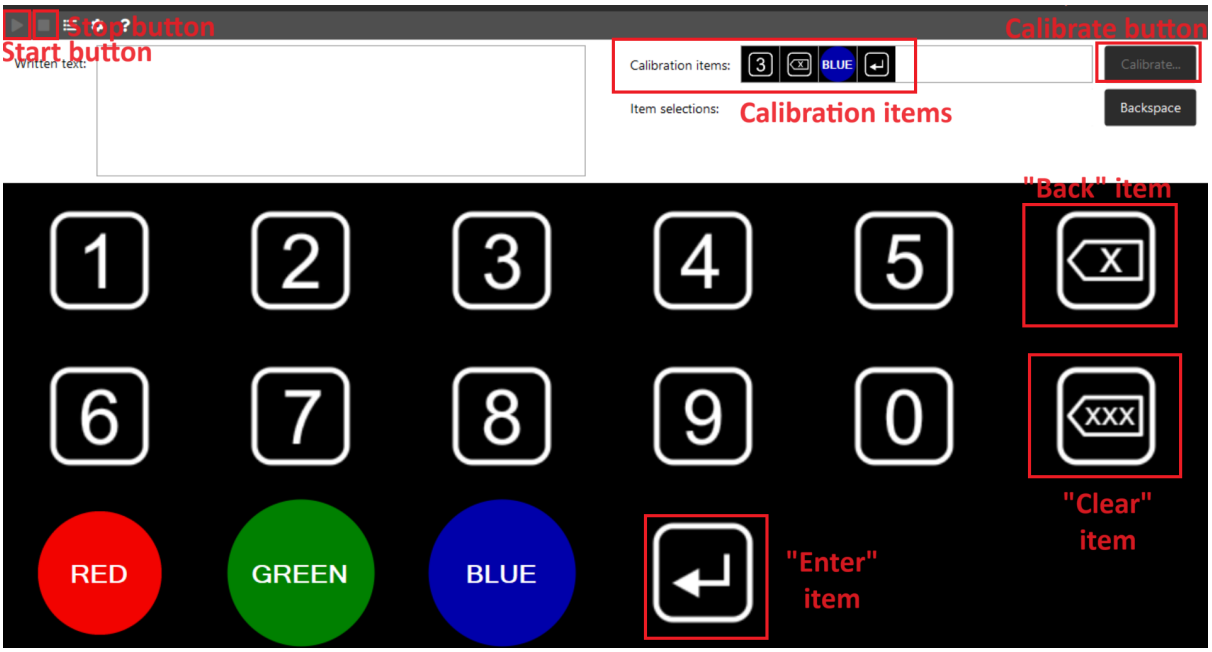
1. Prepare the sticky electrodes and stick them to the left and right mastoid bones behind the user's ears as highlighted in red circles in the image below.



2. The brain interface should be washed and all the EEG electrodes appropriately attached to the brain interface as highlighted in the image.
3. The user will put the cap on their head and the hostess should check if all the EEG electrodes are perpendicular to the user's head.
4. The hostess attaches the left and right sticky electrodes (marked L and R) to the user's head.
5. **(optional, but recommended)** The hostess fills the EEG electrodes with conductive electrode gel.
6. Connect the brain interface to the computer and turn it on.

Calibrating the brain interface and recording the input

7. Prepare the screens so that on one screen the user will see the Unicorn Speller program and the full-screen hexagon app on the other.
8. Instruct the user to click on (at least) 4 arbitrary items in the Unicorn Speller program.
9. Instruct the user to click the “Calibrate…” button and wait for the calibration to finish.
    a. Explain that the user should focus on the calibration item sequentially one by one as shown on the screen.
10. Once the calibration is finished, instruct the user to delete the item selection by clicking on the “Backspace” button.
11. Instruct the user to click the “Start” button to start the data acquisition.
    a. Explain that the user should first fill in their personal ID and then choose a color. Also, explain the functionality of the “Back”, “Clear” and “Enter” items:
        i. “Back” item erases a single character from the personal ID (on the final screen not in Unicorn Speller)
        ii. “Clear” item erases all characters (on the final screen not in Unicorn Speller)
        iii. “Enter” item finishes the selection and colors a triangle in the final screen.
12. After selecting the “Enter” button, the user should stop the data acquisition by clicking on “Stop” button.



Handling errors and other remarks

The hostess can help throughout the experiment with the following actions:

- In the **admin console**, the hostess can:
    1. confirm the selection,
    2. erase a single character
    3. erase all characters,
    4. deselect color to the default one (red),
    5. clear the canvas or
    6. save the canvas.
- Based on experience it may happen that the user loses his or her focus **if the wrong item is selected**. In this case, try to calm the user or restart the experiment.
- **To restart the experiment:**
    1. Stop the data acquisition by pressing the “Stop” button in Unicorn Speller.
    2. Delete the input in Unicorn Speller.
    3. Delete the input in the app by erasing all characters.
    4. Start the data acquisition by pressing the “Start” button in Unicorn Speller.
- If you wish to **fix the user’s input manually**, you can do it by changing the data directly in the *data/brain_interface_data.json* file.
    - When changing the color, only `red`, `green` and `blue` are viable options.
    - When changing the personal ID, only input numeric characters.
- In the **worst case scenario**:
    - clear the canvas in admin console,
    - restart Chrome tabs,
    - shut down the PowerShell scripts and restart them.
    - If nothing of the above works, call 040-253-134.