

Use Case 1: New Session

Primary Actor: Neureset Device User

Preconditions:

1. The Neureset Neurofeedback device is powered on and operational.
2. The device is in the main menu interface with options visible.

Success Guarantee: The success of this use case is guaranteed by the device's ability to establish proper contact with EEG electrodes and deliver the treatment according to the LENS protocol. Session data is accurately recorded for further analysis and tracking.

Stakeholders and Interests:

1. Machine Users- Interested in easy initiation and monitoring of neurofeedback sessions for cognitive and emotional wellness.
2. Developers/Manufacturers- Interested in ensuring device reliability, accurate data recording, and user-friendly interface.
3. Doctors: Interested in leveraging accurate session data for analyzing progress and optimizing treatment plans.

Trigger: User selects the "New Session" option from the main menu interface.

Main Success Scenario:

1. The user selects the "New Session" option from the main menu.
2. The device prompts the user to ensure proper contact with EEG electrodes and initiates a timer once contact is established, indicated by a blue light on the left corner of the device, by blinking once.
3. The device begins calculating the baseline average frequency for all 21 EEG sites concurrently over 1 minute.
4. After establishing the baseline, the device starts the treatment process according to LENS protocol. It adds an offset frequency of 5Hz to the baseline frequency every 1/16th of a second for one second at each EEG site.
5. During treatment, a green-light flashes on the device, indicating that treatment is being delivered.
6. The device moves sequentially through all 21 EEG sites, applying the rapid treatment process to each site.
7. The device displays session progress through a timer showing time remaining and a session progress bar indicating how much the session has progressed.
9. After completing treatment for all 21 sites, the device saves session data, including before and after baseline frequencies, along with date and time information.

Extensions:

- 2a. If the user experiences difficulties in establishing contact with EEG electrodes, the device provides troubleshooting guidance.
- 5a. The user has the option to voluntarily pause the session by pressing the pause button on the device.
- 5b. The user can also terminate the session by pressing the stop button on the device.
- 7a. If contact is lost during the session:
 - The red-light flashes, indicating contact loss.
 - The session pauses automatically, and the device starts beeping until contact is re-established.
 - If contact is not re-established within 5 minutes, the device turns off automatically, and the session data is erased.
- 9a. Upon session completion, the device will create a file in the Build directory where the session data (logs, feedback, etc.) will be saved.

Postconditions: The user can view session history in the session log option from the main menu.

Use Case 2: Session Logs

Primary Actor: Neuroset device user

Stakeholders:

Neuroset device users: Individuals who will use the treatment machine on themselves.

Developers/Manufacturers: Individuals who will ensure the reliability and working ability of the device.

Doctors: Who want to leverage the device for their patients.

Precondition: Previous treatments have been applied.

Success Guarantee: User can view their session logs.

Main Success Scenario:

1. Press the power button.
2. Navigate to the Session logs option, by pressing the down button once.
3. Press the play button.
4. Previous session logs are listed on the screen.

Extensions:

- 1a. There is insufficient battery to run the program, and the device can't be turned on.

Use Case 3: Edit time and date

Primary Actor: Neuroset device user

Stakeholders:

Neuroset device users: Individuals who will use the treatment machine on themselves.

Developers/Manufacturers: Individuals who will ensure the reliability and working ability of the device.

Doctors: Who want to leverage the device for their patients.

Precondition: N/A

Success Guarantee: The user can edit the date and time.

Main Success Scenario:

1. Press the power button.
2. Navigate to the edit date and time option, by pressing the down button twice.
3. Press the play button.
4. Edit the date.
5. Edit the time.

Extensions:

- 1a. There is insufficient battery to run the program, and the device can't be turned on.