COMP 3004 W Project - Neurofeedback Device

Group 21

(USE CASE)

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1.1 Normal Case: Conducting a Neurofeedback Session

Primary Actor:

Neureset Direct Neurofeedback Device

User

Scope:

Neureset Direct Neurofeedback Device

Level/Type:

Primary

Precondition:

The device is on and the headset is connected to the device.

Success Guarantee:

The device successfully administers neurofeedback treatment to all EEG sites.

Main Success Scenario:

1. User selects the "New Session" option from the menu.
2. Session starts, the device opens a timer upon establishing contact with EEG electrodes.
3. The device reads signals from each of the 21 EEG sites on the headset.
4. Device establishes a baseline average frequency for each site over approx. 1 min.
5. Treatment is delivered according to the LENS protocol, adding an offset frequency of 5Hz every 1/16th of a second.
6. The device flashes a green light during treatment to indicate signal delivery.
7. Treatment is repeated for one second at each EEG site.
8. 21 treatments applied successfully, session ends.

Extension:

23a. Contact is lost during treatment

1. Session pauses. Device alerts the user, tries to reestablish or shuts down after 5 min.

2-7a. User pauses the session

1. Session pauses. Device waits for resumes, or shuts down after 5 min.

1.2 Normal Case: Viewing Session Log History

Primary Actor:

User

Scope:

Neureset Direct Neurofeedback Device

Level/Type:

Primary

Precondition:

The device is powered on.

Success Guarantee:

User successfully accesses the session log history.

Main Success Scenario:

1. User selects the "Session Log" option from the device menu.
2. The device displays the time and date of each session.
3. The user can scroll through the session log.

Extension:

None

1.3 Normal Case: Setting Date and Time

Primary Actor:

User

Scope:

Neureset Direct Neurofeedback Device

Level/Type:

Primary

Precondition:

The device is powered on.

Success Guarantee:

User successfully sets the date and time on the device.

Main Success Scenario:

1. User selects the "Date and Time Setting" option from the device menu.
2. User inputs the current date and time using the device interface.
3. The device setting is synchronized with user-inputted date and time.

Extension:

None

1.4. Normal Case: Low battery

Primary Actor:

Neureset Direct Neurofeedback Device: Delivers treatments to user

User: Receives treatments from the EGG sites

Precondition:

Device at low battery

Success guarantee:

Device battery color will change, but the device can still function.

Main Success Scenario:

1. Device system detects the battery is below a range.
2. Device system manages to change the color of the battery icon.
3. User charges the device.
4. Control system detects the battery is within the range.
5. Device system changes the color based on the range of battery percentage

Extension:

3a. Device not being charged.

1. Charging port on the device is not working.
2. Device fails to detect the charging signal.
3. Device detects charging signal, fails to change the state.

34a. Device battery within range but display message is not removed.

1. Device system not working properly.

2. Error Case: Device lost connection

Primary Actor:

Neureset Direct Neurofeedback Device

Precondition:

Session started, but the contact is not initiated due to loss of connection.

Success guarantee:

The connection is reestablished, device back in session.

Main Success Scenario:

1. User starts the new session, and the timer opens.
2. Connection to the **EEG sites** fails, session pauses with red light flashes, and alert beeps.
3. Device tries to reconnect.
4. Fail to reconnect in 5 mins.
5. Device shuts down, session log deleted.

Extension:

2a. Connection fails but session is not paused.

1. Device system control is not functioning.
2. Signal not sent to session successfully.

3a. Device reconnected, but the signal/alert is still on.

1. Control system is not functioning.
2. Reconnection not detected.

3. Error Case: Out of battery (0%)

Primary Actor:

Neureset Direct Neurofeedback Device

Precondition:

Device battery drained. (at 0%)

Success guarantee:

Device displays a message to the user, the device cannot be used.

Main Success Scenario:

1. Device system detects the battery is completely out.
2. Device system manages to alert the user, and all the functions cannot be used.
3. User recharges the device.
4. Device system detects a low battery.
5. Functions can be used, while a low battery message displays.

Extension:

3a. Device not being charged.

1. Charging port on the device is not working.
2. Device fails to detect the charging signal.
3. Device detects charging signal, fails to change the state.

34a. Device battery is not completely out but the display message is not changed.

1. Device system not working properly.

5a. Device battery within range but display message is not removed.

1. Device system not working properly.