

# ExcITED EEG



## EmotivDriver User Guide

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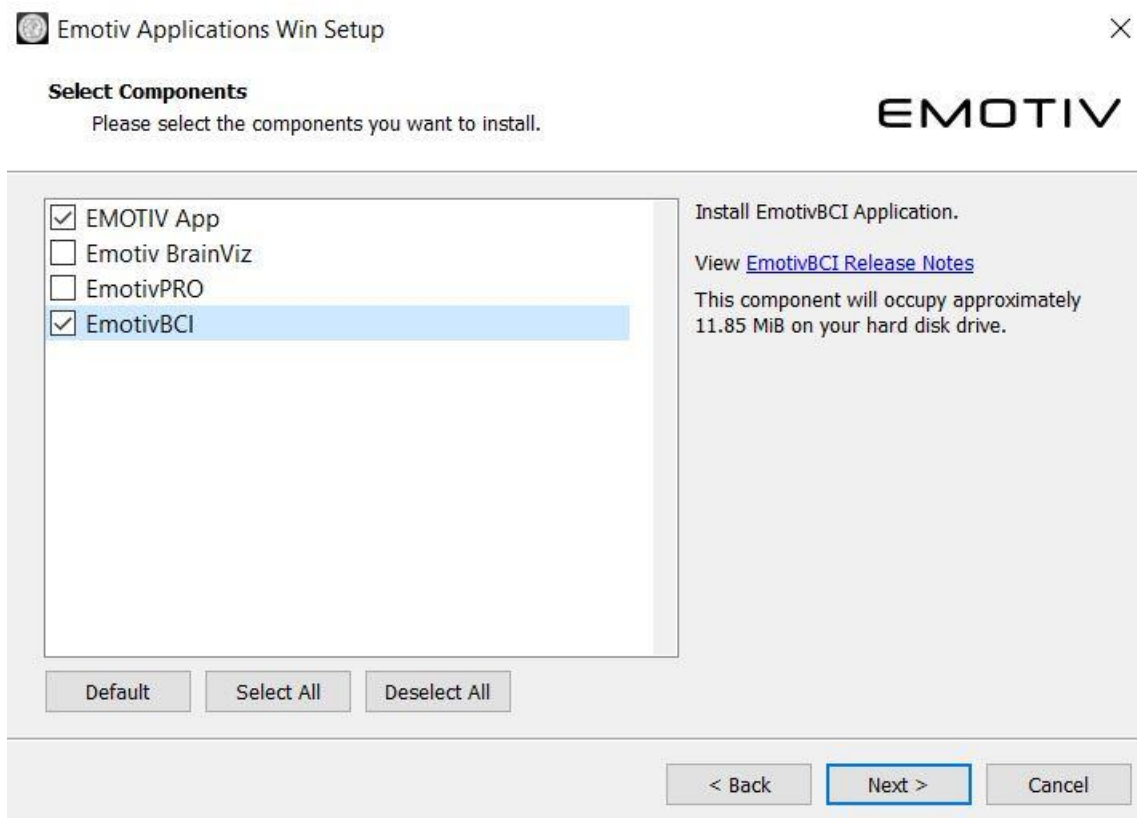
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## Installing prerequisite software

The necessary software must be installed in order to use the Emotiv drivers with the headset.

### Emotiv software

Emotiv have developed their own set of apps to connect to the headset, manage user profile, and calibrate EEG commands. These apps are available at [emotiv.com](https://www.emotiv.com).



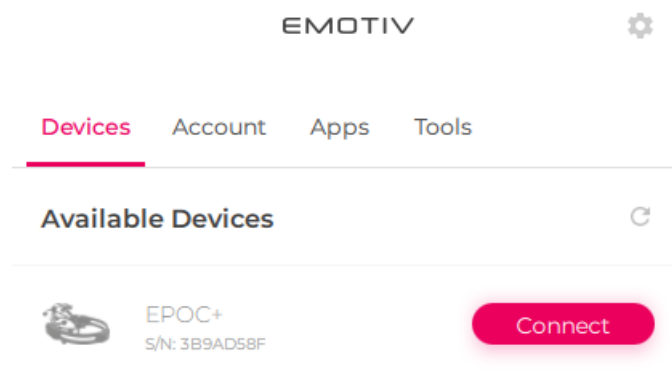
During the installation process, make sure to also install Emotiv BCI.

### EmotivDriver

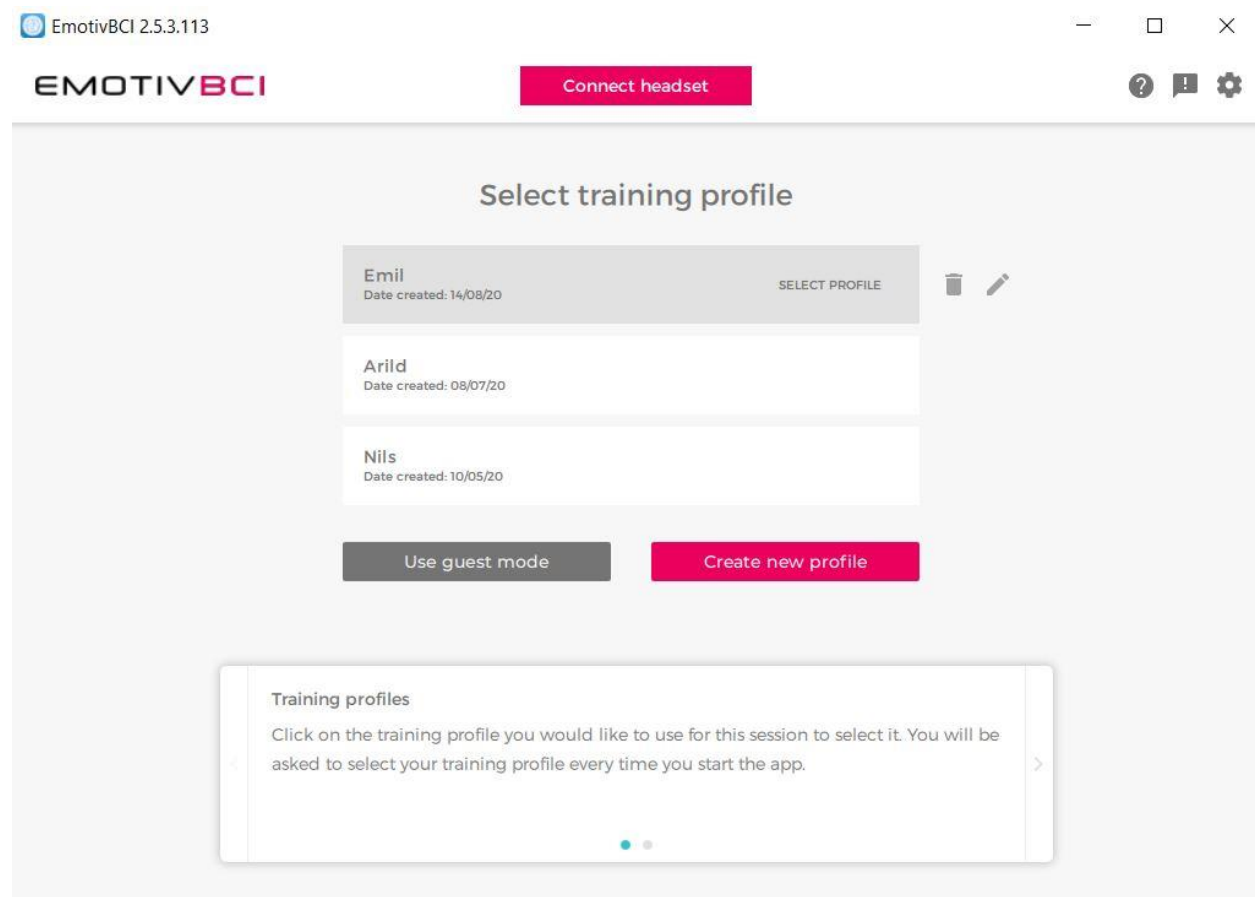
EmotivDriver is developed at NTNU in order to communicate between the Emotiv headset and third-party apps. The driver can be downloaded at <https://github.com/NTNU-IE-IIR/excited-eeg>.

## Emotiv profile

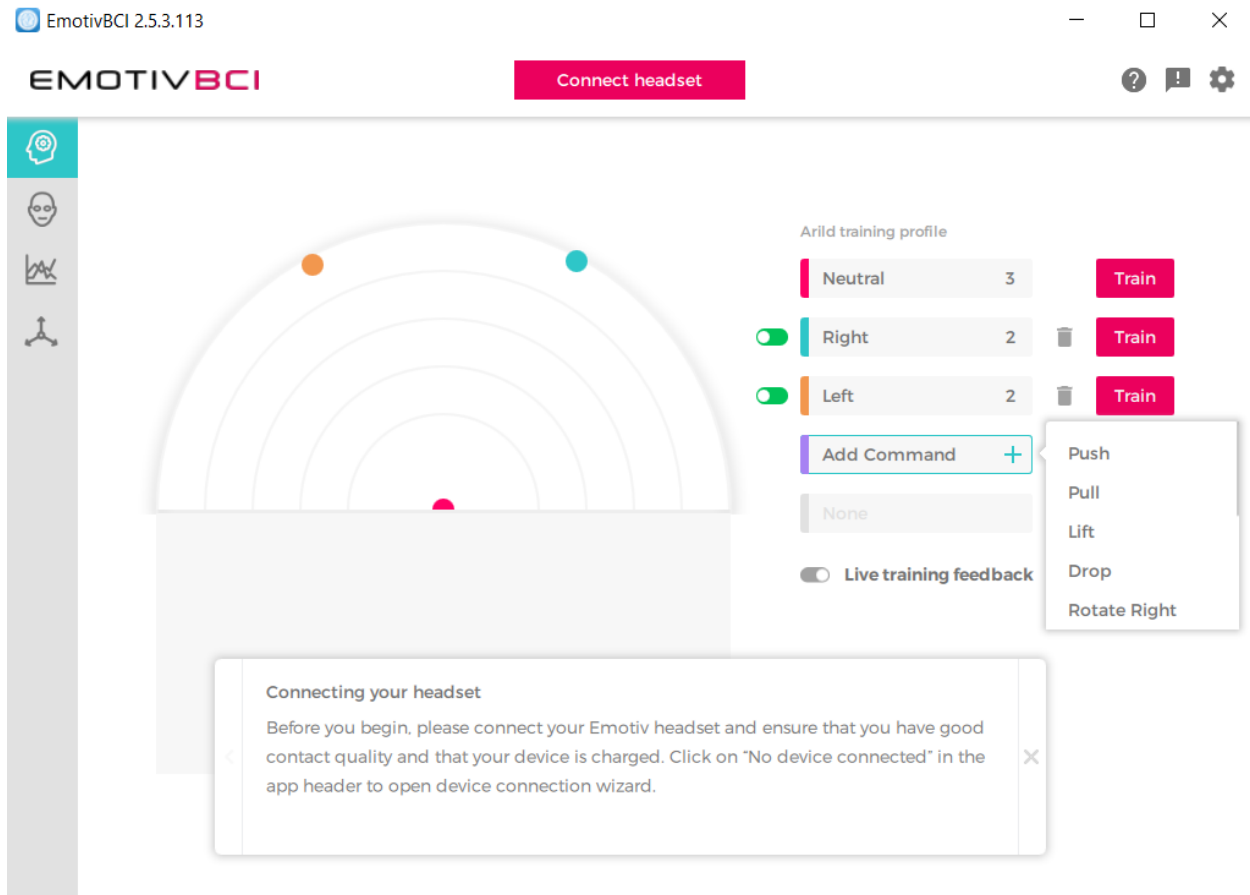
In order to use EmotivDriver, the user must first create a profile in Emotiv BCI. First connect to the headset using the Emotiv App.



Next, open Emotiv BCI and choose Create new profile.



Once the profile is created, the relevant EEG commands must be associated with it. This is done by selecting Add command within the profile view.



The commands used by the Android keyboard are Left, Right, Push, and Pull. Other third-party apps may use other commands. To use these, you must make sure the correct commands are associated with your profile

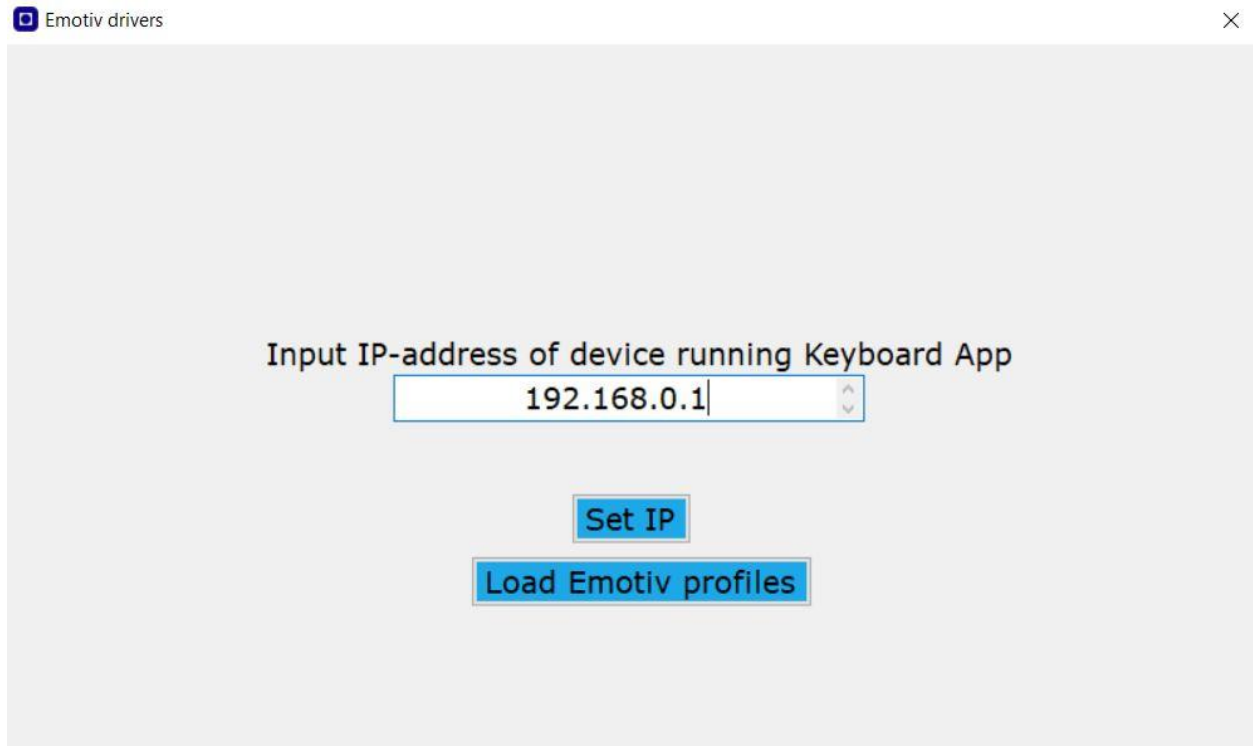
After adding the commands, they must be calibrated. Start the calibration by selecting Train next to each command. It is recommended to run the calibration process several times for each command in order to ensure high accuracy readings from the headset.

## IP address

In order to use EmotivDriver with third-party apps you must know the IP address of the device running the app. This is found by the following steps:

1. Open settings
2. Select About
3. Select Status

4. The IP address should now be displayed
5. Enter the IP address in the EmotivDriver interface, and press Set IP. (Note that your IP address may differ from the one pictured).



## Using the headset

To use the headset with EmotivDriver, the following sequence must be followed:

1. Connect to the headset via Emotiv App.
2. Start EmotivDriver.exe
3. Enter the IP address of the relevant device
4. Select your profile in the EmotivDriver menu
5. Start the third-party app

## For developers

EmotivDriver receives data from the headset through the Emotiv API. This data is processed and forwarded to the IP address specified. Each EEG command is represented by a numeric value passed as a String using WebSocket. The EEG command and their associated numeric values are found below.

Emotiv command	Sent to WebSocket
Left	"1"
Right	"2"
Push	"3"
Pull	"4"
Lift	"5"
Drop	"6"
Rotate right	"7"
Rotate left	"8"
Rotate clockwise	"9"
Rotate counterclockwise	"10"
Rotate reverse	"11"
Rotate forwards	"12"
Disappear	"13"