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g.PingPong V2.12.00

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This quick overview shows HOW-TO play Ping Pong with a Brain Computer Interface.

Record data to generate the classifier

Record a dataset using the Brain Computer Interface supplied with g.USBamp Highspeed Online processing for Simulink. By double clicking the **Paradigm** block, select the **paradigm** with **no feedback** and **run** number 1.

Perform this recording for player 1 and player 2. Save the data from player 1 in the file e.g. `Player1.mat` and `Player2.mat`.

For further information how to record these datasets use the manual `BrainComputerInterfacewithgUSBamp.pdf`.

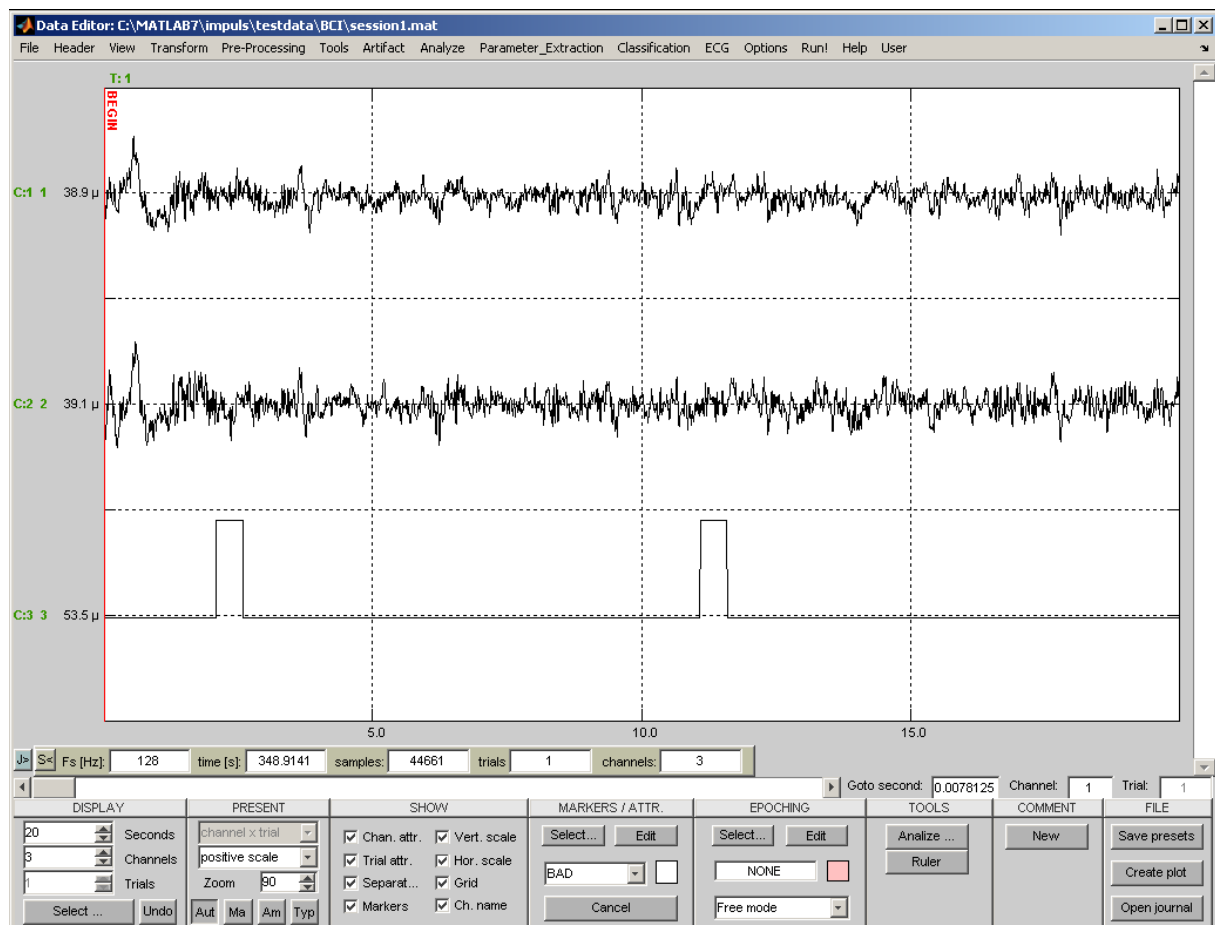
BCI Batch Processing

Type into the MATLAB command window

```
gbsanalyze
```

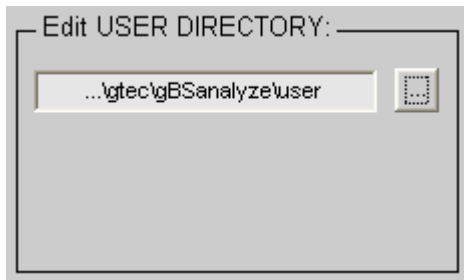
to start the Data Editor.

Load the acquired data file `Player1.mat` for the calculation of a new weight vector for the next on-line experiment with feedback.

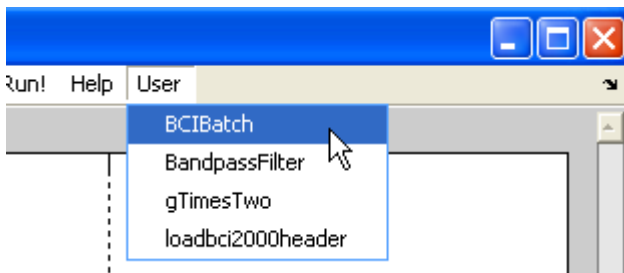


Then open the **Appearance Settings** window from the **Options** menu and browse for the **user** directory under

Your MATLAB path: `\gtec\gBSanalyze\user`



Confirm the settings by pressing **OK**. Now the **User** menu of g.BSanalyze is populated and contains the BCIBatch.



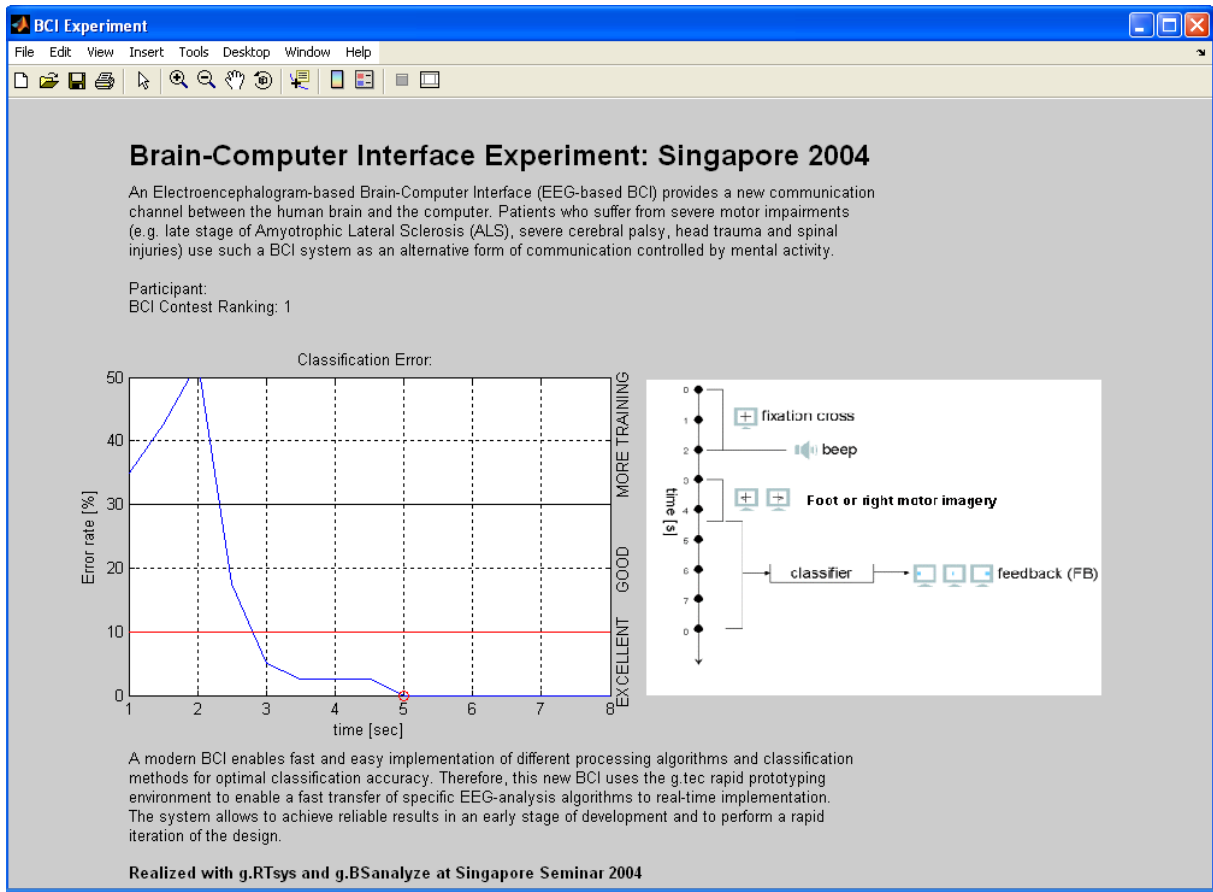
Select the BCIBatch to automatically process the data. Use the MATLAB editor to investigate or modify the processing steps.

```

1  %BCI Batch for gBSanalyze version 3.0
2  %1999-2006 - g.tec medical engineering GmbH
3
4  %Use this batch for the BCI implementation of g.MOBILab and
5  %for the BCI model of Highspeed On-line Processing for Simulink
6 - global P_C
7 - global V_R
8
9  %Simulink model with 128/256 Hz
10 - fs=P_C.SamplingFrequency;
11
12 %Trigger the data, 2 seconds before trigger and 6 seconds after trig
13 - New_tm{1}={3 1 '1' 90 0};
14 - SamplesBefore=2*fs;
15 - SamplesAfter=6*fs;
16 - Uncomplete=0;
17 - ChannelExclude=[];
18 - P_C=gBSttrigger(P_C,New_tm,SamplesBefore,SamplesAfter,Uncomplete,Chan
19

```

After a few seconds the analysis batch shows automatically a BCI experiment report containing a description of the BCI experiment and an error rate time curve. The best time point is indicated by a red circle.



The BCI batch also calculates the subject specific weight vector which is needed for the experiment with feedback.

Type the following code into the MATLAB command window:

```
WV
```

to investigate the weight vector.

Save the weight vector from Player 1 in the variable *WVA* by typing the following code into the MATLAB command window:

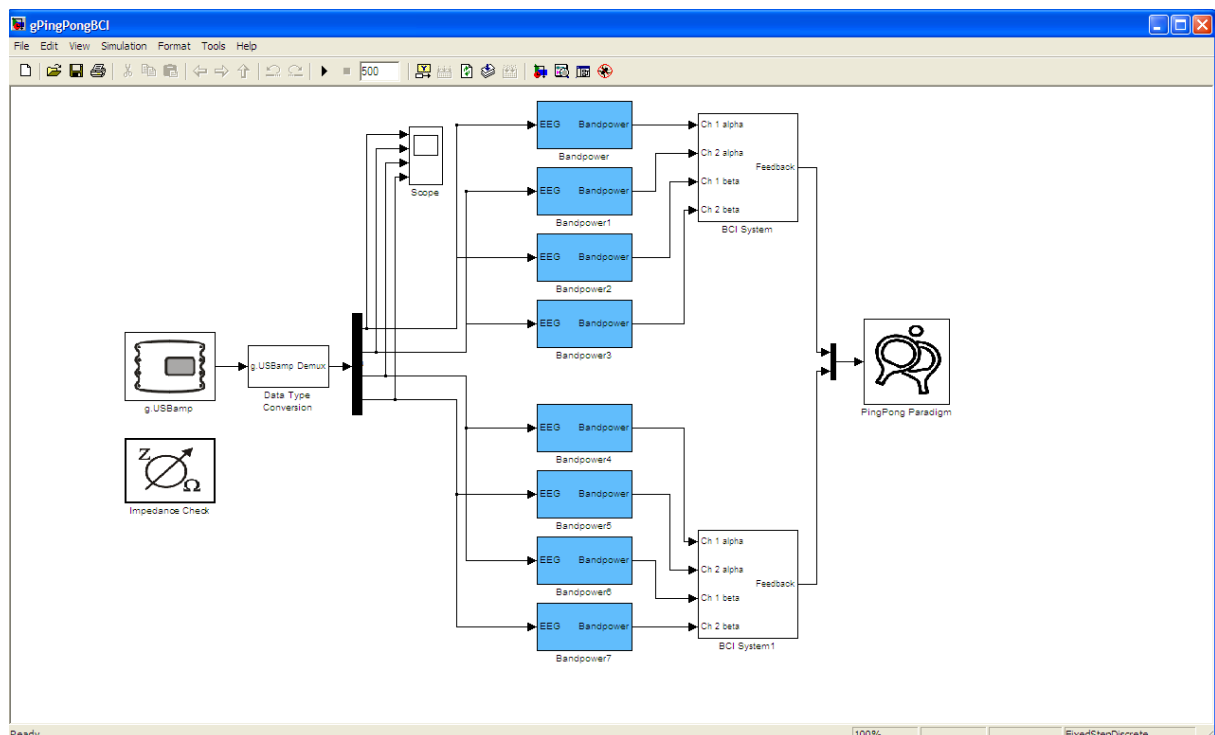
```
WVA=WV;
```

Perform the same steps for the dataset of Player 2. Save the weight vector from Player 2 in the variable *WVB* by typing the following code into the MATLAB command window:

```
WVB=WV;
```

Playing Ping Pong

Open the file *gPingPongBCI.mdl* to open the following Simulink window. Double click on the **g.USBamp** block, press the **Load** button and load the *gPingPongBCI.cfg* configuration file.



Enter the serial number of your amplifier and press **OK** to close the configuration window.

Double click on the **PingPong Paradigm** block to choose **Mode** and **level** of the game.

Close the block and press the play button in the Simulink model to start playing Ping Pong.



contact information

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