Release April 2016

Data Acquisition (DAQ) Module

Description

Incorporation of new DAQ Module to be used in:

- 32-bit version or 64-bit version of the Windows operating system.
- Windows 7/8
- Matlab 32/64 bits.

It has the functionality to load binary files.

Additional Information

- **For windows 8**

In order to detect automatically the parallel port you need to replace the old devcon32.exe. You can download the Windows Driver Kit (WDK) 8.1 from: https://msdn.microsoft.com/en-us/windows/hardware/hh852365

To be used in windows 8 LENOVO LAPTOP it uses the following express card. The new card express card model is: 1 Port ExpressCard Laptop Parallel Adapter Card - SPP/EPP/ECP. From StarTech. Here is the website: http://www.startech.com/Cards-Adapters/Parallel/1-Port-PCI-Express-Base-Parallel-ExpressCard~EC1PECPS

Important notes

For the moment is not able to do the first test of synchronization in windows 8. So it is needed to be added in RSVPketyboardPresentation the following command.

Screen('Preference', 'SkipSyncTests', 1);

Additional Evidence: Feedback Related Potentials

Description

Availability to incorporate additional evidences in the code. In addition to the ERP evidence here we add feedback related potentials evidences. We propose to use the detection of error related potentials (FRP) in the EEG response and propose different probabilistic approaches to incorporate (FRP) evidences in decision making process.

In this new release two evidences and a prior from a language model are used for decision making process.

Design

A new class called Evidence class handles the evidences extracted from the feature extraction and decide the next trials to shown in presentation for each evidence.

Experimenter Instructions:

Different tasks can be applied:

1. **Calibration ERP**
2. **Calibration FRP**
3. **Spelling Task**
4. **Copy Task**
5. **Mastery Task**

1-2: Calibrations Tasks 3-4-5: Typing Tasks

For Typing tasks (Spelling, mastery and copy tasks) three different paradigms can be used. By Default the parameters are set to be typing type 2 and is compatible with ERP and FRP Calibrations sessions.

```
% RSVPKeyboardParams.TypingType=2;
```

- 0 : Not Typing Task (Calibration FRP or Calibration ERP)
- 1 : Typing Task not using FRP evidences
- 2 : Typing Task using FRP evidences, and showing a sequence of type 2 (prospect) after each ERP sequence.
- 3 : Typing Task using FRP evidences and showing a prospect when reaches the stopping criteria

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For **Calibration FRP** task the experimenter needs to load the ERP trained classifier (calibrationERP.mat)

For **typing tasks** using ERP evidences and FRP evidences the experimenter needs to load the ERP and FRP trained classifiers (calibrationERP.mat and calibrationFRP.mat).

For **typing tasks** using only ERP evidences the experimenter needs to load only the ERP trained classifier (calibrationERP.mat).

Before a typing session an ERP calibration and FRP calibration sessions have to be run (the second only if the system is going to use FRP evidences) followed by offline analysis for each session in order to train the ERP and FRP classifier.