Tutorial 1:
Sensors, data logging and the lab streaming layer

Summary

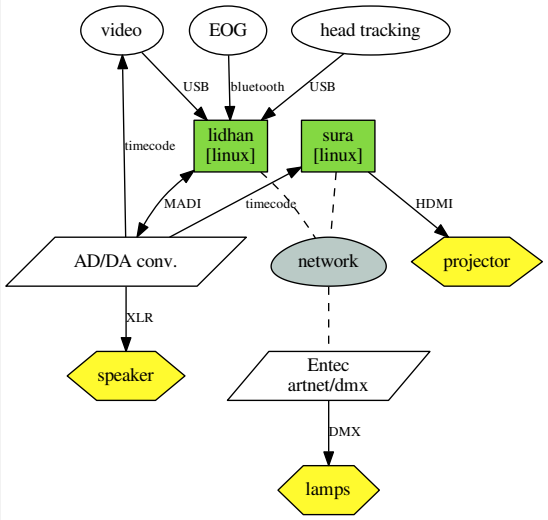
This tutorial is about collecting data from external sensors using TASCARpro and lab streaming layer. In this tutorial you will learn how to use head tracking, electro-oculography (EOG) and video recordings in TASCARpro environments. Learn how TASCARpro communicates with lab streaming layer and about the different types of data streams. At the end you will be able to use TASCARpro data logging for the recording of synchronised sensor data.

What will I learn?

- How to use head tracking, EOG and video recordings
- Communication between TASCARpro and lab streaming layer

What can I use it for?

- Recording of synchronised sensor data



- Make a copy of file `cafeteria.tsc` in text editor.
- Find `<glabsensors.../>` module in the scene definition (see also manual). Have a look at the sensors in Gesture-lab – what kind of information can they send?
- To connect the bluetooth based EOG sensor make sure it is switched on. Then type in a terminal (before starting TASCARpro):

```
sudo rfcomm connect 1
```

```
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```

If it displays `Press CTRL-C for hangup` then everything should be fine – otherwise ask Maartje, Giso, Jan, or Joanna.

- In the command line type `tascar_lslsl`, which shows a list of LSL streams. What streams are available?
- Find `<datalogging>...</datalogging>` external module (manual). Set up the data logging for the EOG. Put in a Trial ID in the datalogging window and try recording for some time. Where is your data stored?
- The `<datalogging>...</datalogging>` external module not only allows you to store data streams from sensors, but you can also send discrete variables as OSC messages. This could be useful when running an experiment script from Matlab. For example information about the subject behavior can be send as an OSC message, so that later it can be seen exactly when an event happened. To do this, you have to define this variable in the datalogging (manual), for example: `<variable path="/notfacingforward" size="1"/>` To send the OSC message from Matlab or from the terminal, for example type:

```
send_osc( 'lidhan', 7777, '/notfacingforward', <number>);
```

Try to define a boolean variable “distracted”, which you will send while the experiment is running if the subject is distracted.

- While the experiment is running, values of the data streams can also be accessed from Matlab and can be used to change experiment parameters. Have a look at the `tutorial1.m` Matlab script that shows how to do this.
- Be creative! Perform an experiment, during which the head and eye movements will be recorded. Try to change something based on the measured data in realtime.

  Include something about accessing data in realtime.