

Practical Sessions

Four practical exercises will take place during the school. The exercises are planned to cover different types of eye-trackers (kindly offered for the school by SMI, Tobii and Mirametrix), and different application domains.

All participants to the school will have a chance to go through all four exercises. During the practical exercises the participants will be organised into four groups of about 12 people each. During the practical sessions, the groups will rotate through the four different labs set up for the school.

During Practical Session 1 (Tue 24/11), the participants will have a chance to get familiar with the setup and the equipment in the labs. Practical Session 2 (Wed 25/11) will be dedicated to the experimental setup part of the exercises, and participants will spend 15 minutes in each of the four labs. In Practical Sessions 3 and 4 (Wed 25/11) the participants will make use of the experimental setup created before to record each other and log eye-tracking data. About 30 minutes per station will be allocated for this. Finally, during Practical Sessions 5 and 6, the participants will analyse the data obtained in order to prove (or disprove) the original hypothesis. Again, 30 minutes per station will be allocated for the data analysis.

Instructions about the exercises are included in the participant's pack. The organisers will provide guidance during the Practical Sessions while the participants are expected to work in small groups on dedicated eye-trackers through the different stages. A short description of the exercises is given below.

A guided tour to Eye-tracking in emotion expression recognition

Organiser: Guiseppe Boccignone

Assistants: Antonio Clavelli, Fernando Vilariño

Location: Lab 1

Equipment: SMI HiSpeed

Is gaze fixation distribution, as measured during an emotional expression recognition task, a function of the emotional display? During this practical exercise we will examine the above hypothesis by setting up an experiment comprising static image stimuli representing facial expressions of basic emotions (anger, disgust, fear, happiness, sadness, surprise). The exercise will cover aspects such as setting up the stimuli, defining regions of interest, recording using a hi-speed eye-tracker, and analysing data using MatLAB scripts.



Using eye-tracking to evaluate visual distraction during driving

Organiser: Sandra Trösterer

Assistants: Laura Pérez Zapata

Location: Lab 2

Equipment: SMI HED

How much visual attention is put on an in-vehicle information system? Does visual distraction rise with higher task complexity? Do drivers develop visual search strategies? In this practical an experimental setting will be build up, where a secondary task (handling of a navigation system) has to be performed while driving the Lane Change Task (LCT). Gaze data will be recorded using a head-based eye-tracker (i-View X HED, SensoMotoric Instruments) and the students will learn how to adjust the system, how to do the calibration and the recording. The focus of the analysis lies on video data analysis and the use of dynamic areas of interest in the software BeGaze.



Subtitling or dubbing?

Organiser: Marcus Nystöm

Assistants: Ana Píres

Location: Lab 3

Equipment: SMI RED

The purpose of this practical session is to explore the possibilities and limitations of using a remote eye-tracker. By working with a simple video experiment, you will learn basic techniques for how to prepare stimuli as well as record and analyze data with commercial software.



In this practical session, you will record eye-movements from each other while viewing videos with subtitles, and investigate how much attention is directed to the subtitles in relation to other relevant video areas. Data will be analyzed with respect to areas of interest (AOIs) in the video. Practical issues related to sampling frequency and smooth pursuit will be discussed in relation to eye-tracking experiments with moving stimuli.

Effectiveness of Image Layout

Organiser: Andrew Duchowski

Assistants: Anna Vilaró

Location: Lab 4

Equipment : Tobii (T120, T60XL, X120), Mirametrix

Collecting eye movements over a single static image can reveal the viewer's attentional deployment, which could be indicative of the viewer's evaluation of the image or the viewer's *intent*. In the former case, where the viewer attended to could suggest those image regions that the viewer found interesting. For example, regions in artwork that draw the viewer's attention, or some other pleasing forms of colour, contrast, etc. In the latter case, the sequence of the viewer's fixations, their *scanpath*, could be indicative of a cognitive strategy used to direct gaze. For example, a left-to-right scanning strategy is typical of English readers when reading text. Although less obvious, a scanning strategy between text and images may also indicate some form of coherence the viewer is striving to achieve between related pictures and descriptions. In usability and/or marketing applications, one is often interested in detecting a strategy used when making decisions, e.g., when considering a purchase. Eye movements may help determine whether the viewer is seeing relevant information (product descriptions), and/or whether particular image regions (advertisements) are being viewed at all.



To test the hypothesis that “deictic reference” in advertisement draws visual attention, we will consider the number of fixations as our main dependent variable. More specifically, we would like to count the number fixations in a specific region of interest that we define in our given image. To test the effect of deictic reference (our operational treatment, or independent variable) we want two images that are identical to each other in all respects but one: the use of deictic reference. The study can be performed within-subjects, such that each viewer sees both images. To counteract order effects, we will either explicitly control the presentation order, or have it be randomized.

In this exercise the participants will have a chance to work with different modes of remote eye-trackers from Tobii (including the wide-screen T60XL) and Mirametrix.