

# EEG and Eye-Tracking Team

# Analysis Similarity

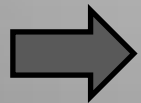
- Eye-Tracking = A
- EEG = B
- Combination = C

⇒ Determine the weight of the parameters

$$x*A + y*B + z*C = \text{result}$$

# Analysis Similarity: Eye Tracking

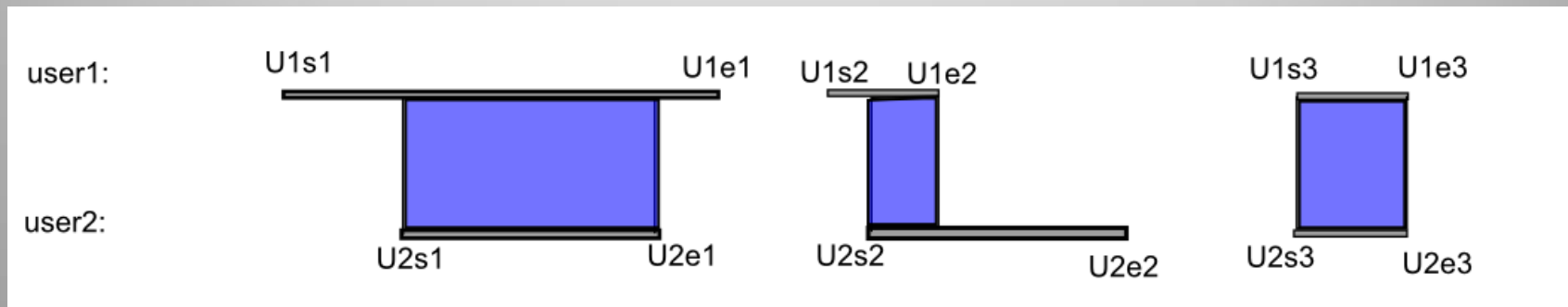
- 3 Trailer
- 9 Participants (8 valuable data sets)
- What kind of data do we have?
  - Fixations
  - Fixations overlapping (time and location)
  - Duration of overlapping fixations



Take datasets of two users who watched the same video

# Analysis Similarity: Eye Tracking

$$\min(\text{end1}, \text{end2}) - \max(\text{start1}, \text{start2})$$



case1:  $\min(U1e1, U2e1) - \max(U1s1, U2s1)$

case2:  $\min(U1e2, U2e2) - \max(U1s2, U2s2)$

case3:  $\min(U1e3, U2e3) - \max(U1s3, U2s3)$

# Analysis Similarity: Eye Tracking

User1 & User2	GotG2	NLMG	Conj
#overlap	83	42	47
overlap_duration	36,115s	12,867s	19.129s
...			

- Threshold 0
- Fixation distance up to 50 px

# Analysis Similarity: Eye Tracking

User1 & User2	GotG2	NLMG	Conj
#overlap	41	14	13
overlap_duration	26,328s	6,950s	9,444s
...			

- Threshold 0.5
- Fixation distance up to 50 px

# Analysis Similarity: Eye Tracking

- Paper
- First step for similarity of users
  - Overlaps
  - Compare all data sets
- Fetching streamed data
- Improve similarity measurement

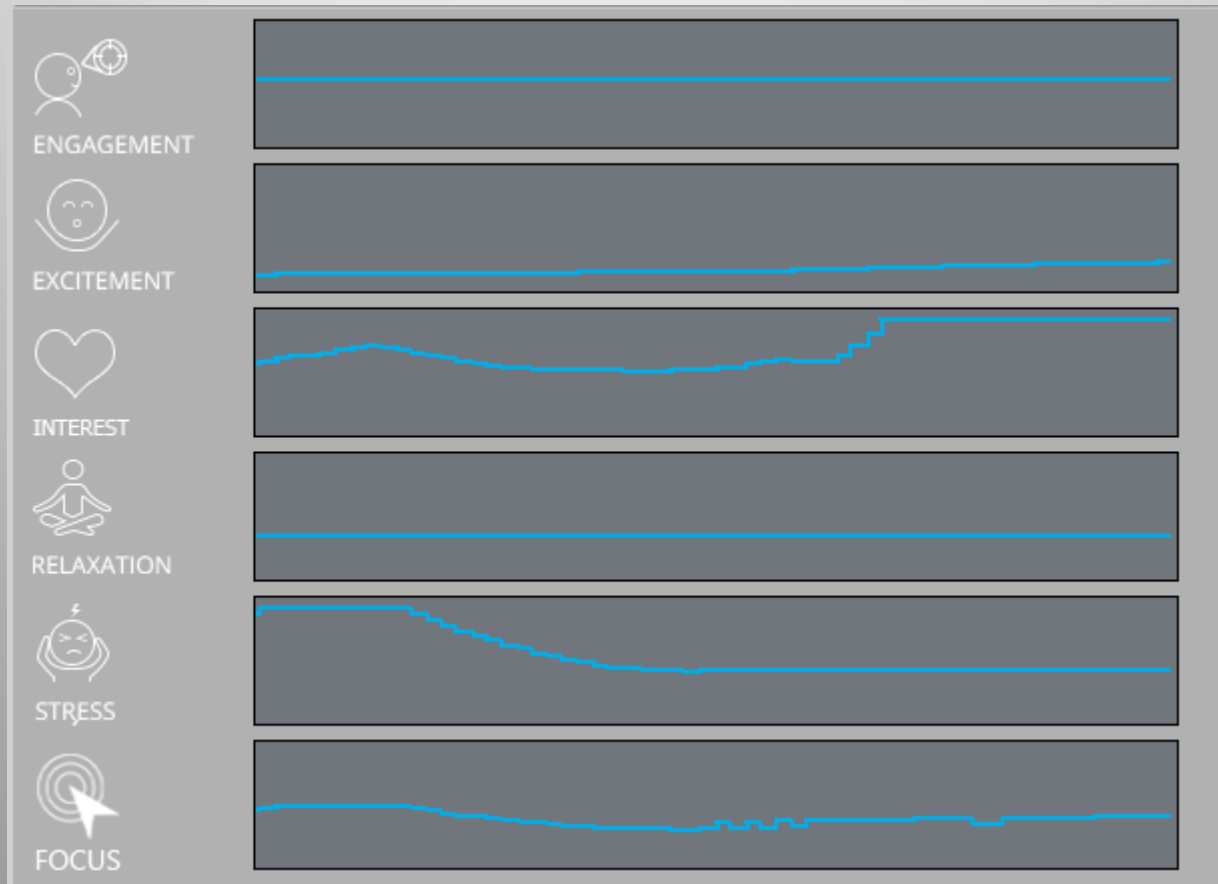
# Analysis Similarity: Emotion-based



# Major recorded emotional states

- Engagement
- Excitement
- Interest
- Relaxation
- Stress
- Focus

# Emotion dynamics example



# Dependencies among emotional labels

	Engagement	Relaxation	Stress	Excitement	Interest	Focus
Engagement	1	0	0,11	0,07	0,11	0,46
Relaxation	0	1	0,05	0,04	0,5	0,5
Stress	0,06	0,53	1	0,35	0,53	0,35
Excitement	0,1	0,24	0,21	1	0,68	0,38
Interest	0,1	0,03	0,47	0,59	1	0,55
Focus	0,48	0,22	0,22	0,48	0,59	1

# Input parameters

- The output for each emotion is a floating point number between zero and one.
- Precision measures run between 65% and 100% depending on the emotion.
- Low value emotion indications do not give relevant information for similarity measurement or tagging.

# Emotion-based video-tagging

## Approach

1. Define most significant emotions, that are:
  - a) In total are most common during the video.
  - b) Exceeding the threshold (borderline value 0.5)
2. Tag video (multiple or all emotions possible).
3. Videos are recommended based on the relative emotion tags. (same as genre)
4. Emotional tags displayed in the player in the information about video as a continuous variable.