

Technical and Methodological Skills

Eye Tracker Hardware and its properties: Essentials of Eye Tracker Laboratory, Measuring eye movements, Data Quality, Types of eye trackers and the properties. **Data Recording:** Experiment set up, Eye Camera set up, Calibration, Recording

Detecting Events and Building Representations

Estimating Oculomotor Events from Raw Data Samples: Principles and algorithms for event detection, Challenging issues, Dispersion algorithm, Velocity and Acceleration algorithms, Blink Detection, Smooth pursuit Detection, Detection of other events. **Area of Interest:** Basic AOI events, AOI based representations, Types of AOI, Issues of AOI. **Attention Maps:** Heat maps settings dialogues, Principles, issues and usage. **Scanpaths:** Usage, Events, Representations, unresolved issues concerning scanpath. **Auxillary Data:** Event based coalignment, Triangular eye-movements data with verbal data

Eye Tracking Measures

Movement Measures: Movement direction measures, Movement amplitude measures, Movement duration measures, Movement velocity measures, Movement acceleration measures, Movement shape measures, AOI order and transition measures, Scanpath comparison measures.

Position Measures: Basic position measures, Position dispersion measures, Position similarity measures, Position duration measures, Pupil diameter, Position data and Confounding factors.

Numerosity Measures: Saccades: number, position and rate, Glissadic proportion, Microsaccadic rate, Square-wave jerk rate, Smooth pursuit rate, Blink rate, Fixation: number, proportion, and rate, Dwells: number, proportion and rate, Participant, area of interest and trial proportion, Transition: number, proportion, and rate, Number and rate of regressions, backtracks and look-aheads., **Latency and Distance Measures:** Latency Measures, Distances -Application of Eye movement measures.

Eye Tracking Techniques, Analysis and Reporting in User Experience

EOG, Scleral Contact Lens/Search Coil, VOG, Video-Based Combined Pupil/Corneal Reflection-Eye Tracking Data Visualizations-Qualitative Data Analysis-Quantitative Data Analysis

TEXT BOOKS/ REFERENCES:

1. Kenneth Holmqvist, Marcus Nystrom, Richard Anderson, Richard Dewhurst, Halszka Jarodzka, Joost van de Weijer, “*Eye Tracking: A Comprehensive Guide to Methods and Measures*”, Oxford University Press
2. Andrew Duchowski, “*Eye Tracking Methodology: Theory and Practice*”, Springer
3. Aga Bojko, “*Eye Tracking the User Experience : A Practical Guide to Research*” , Rosenfeld Media