

STATISTICAL ANALYSIS

Abstract

The main goal of the Statistical Analysis lecture is to prepare participants for coding eye-tracking data statistical analyses in R, understanding and describing the results, and visualizing significant effects. The lecture will contain three parts representing subsequent stages of statistical analysis of eye tracking data.

The first part of the hands-on sessions will be dedicated to preprocessing and tidying eye tracking datasets, incl. computing new variables, recoding, renaming, selecting, and filtering. This part will focus also on identifying and managing outlying data points. The second part of the lecture will cover the statistical investigation of data sets, allowing the researcher to check descriptive statistics and exploratory visualization of eye tracking data. The third part will focus on statistical testing of hypotheses with inferential statistical procedures including t-tests, analysis of variance (ANOVA) and covariance (ANCOVA), correlation, linear regression, Linear Mixed Models (LMM), and mediation analysis. That part will include the statistical results visualization technique in R.

During the hands-on session of the lecture, participants will analyze the data with R scripts by themselves, visualize the statistical results, and describe them in the APA standard for empirical results reporting. Participants of the lecture will receive ready-to-use R scripts with the most common statistical analysis of eye tracking data in R as well as scripts for preparing publication-ready visualizations of statistically significant effects. Note that no prior knowledge of programming in R is required for this workshop.

Dr. Krzysztof Krejtz



Krzysztof Krejtz is a psychologist at SWPS University of Social Sciences and Humanities in Warsaw, Poland, where he is leading the Eye Tracking Research Center. In 2017 he was a guest professor at Ulm University, in Ulm, Germany. He gave several invited talks at e.g., Max-Planck Institute (Germany), Bergen University (Norway), and Lincoln University Nebraska (USA). He has extensive experience in social and cognitive psychology research methods and statistics. In his research, he focuses on the use of eye tracking method and developing a second-order eye data-based metrics that may capture the dynamics of attention and information processing processes (transitions matrices entropy, ambient-focal coefficient K), dynamics of attention process in the context of Human-Computer Interaction, multimedia learning, media user experience, and accessibility. He is a member of the ACM Symposium on Eye Tracking Research and Application (ACM ETRA) Steering Committee.

<http://orcid.org/0000-0002-9558-3039>