Online User Experiments: *Seeing What Map Users See without Seeing Them*

Understanding user behavior and preferences is crucial for designing effective and engaging geovisualizations. Online user experiments are increasingly pervasive fueled by the Covid-19 pandemic, but they may not be ideal for capturing the nuance of user behavior, interaction, and decision-making processes. Online experiments offer advantages such as speedy data collection and ecological validity. In such experiments, eye tracking can offer many additional behavioral metrics to capture some of the missing nuances. However, utilizing built-in cameras of everyday devices (e.g., webcam, front-facing camera of smartphones) without active sensors means online eye tracking is still imperfect and cumbersome, even though we see substantial advancements in gaze estimation techniques in recent years through e.g., employment of unconventional deep neural network architectures.

This workshop is designed for researchers, practitioners, and students interested in conducting online user experiments in cartography with a special focus on webcam eye tracking to study map users' behavior. Building up from a previous ICA workshop on "Workshop on Adaptable Research Methods For Empirical Research with Map Users", we aim to bring collaboratively explore the possibilities and boundaries of the current state of conducting online experiments to inform cartographic practice and map use. This workshop represents the joint efforts of the ICA Commissions on Geovisualization and User Experience (UX).

Call for Presentations

The workshop will consist of a mix of presentations, hands-on activities, and discussions. The first half of our planned half-day workshop will be for participants to present **Lightning Talks**. In 10 minutes, presenters will showcase one major challenge or significant research gap that intersects online user experiment tools/techniques and cartography. Work-in-progress and creative approaches are especially encouraged. Participants will have the opportunity to learn from experts in the field, explore the latest advances and applications for conducting online experiments, and gain knowledge on webcam eye tracking. Example topics could include, but are not limited to:

- Designing effective online cartographic user experiments
- Challenges and opportunities of online experiments
- Data collection methods and metrics (e.g., eye tracking, mouse tracking, online surveys, etc.) relevant for online experiments
- Combine and/or compare online data and lab experiments including physiological or other sensor data (e.g., EDA, EEG, ECG, HRV, PPG, etc.)
- Utilizing webcam eye tracking to measure user attention and engagement
- Machine learning and webcam eye tracking
- Ethical considerations and privacy concerns in online experiments
- Software development and dataset distribution
- Multimodal information fusion and analyzing online experiment data

Organizers:

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Date & time: 8 September 2023 - Sunday (13:00-17:00)

Duration: 4h **(**half-day workshop)

Venue: TBA

Participation Fees: Free of charge

Registration Link or Contact: Please submit an abstract of <250 words by **June 15, 2024,** via email to merve.keskin@plus.ac.at. You can use the template for EuroCarto2024 abstract submissions. The submissions will be reviewed by the workshop organizers for clarity and fit with workshop themes by **July 30, 2024**. A final workshop agenda including accepted talks will be communicated by **August 10, 2024**.

Registration Deadline: August 8, 2024

Registration Cancellation: August 30, 2024

Maximum Number of Participants: 20

ATTACHMENT - STRUCTURE (*provisional*)

Session 1: What does it mean to conduct online user experiments?

- Presentations in designing, conducting, and analyzing online user experiments e.g., using webcam eye tracking, mouse-tracking, classical questionnaires, and qualitative approaches.
    - Keynote (*TBA*)
    - Work in progress papers, early results
    - Research agenda papers (gaps, challenges)

Session 2: Webcam eye tracking -methodology & applications:

- Demos of existing solutions (“show your tools”)
    - The online eye tracking system you have used in your work
    - The best questionnaire software
    - Magical interview analyzing approach
    - Your approach to analyzing the data
- Open discussion/unconference on e.g.,
    - Algorithms for eye tracking and gaze estimation
    - Semi-/un-/self-supervised learning, meta-learning, domain adaptation, attention mechanisms, generative models, and other related machine learning methods for gaze estimation and prediction
    - Tackling the gaze estimation accuracy issue, especially for complex visual stimuli; maps
    - Metrics to be considered for webcam eye tracking
    - Calibration-free eye tracking
    - Issues related to the uncertainty of gaze data
    - Exploring future directions and emerging trends in using these technologies for digital cartography research and practice.
- "After workshop drinks" (optional)