

Automated Areas of Interest : Advancing eye-tracking analysis

Kåre Jensen¹ & Divya Seernani¹, Jessica Justinussen¹
¹ iMotions A/S, Copenhagen, Denmark

Introduction

Areas of Interest (AOIs) are one of the most powerful eye tracking analysis tools, allowing researchers to connect people’s eye orientation to objects in their environment.



Placing AOIs is tedious with dynamic stimuli. Objects move and change shape or people move freely getting closer and further from objects, losing sight of objects or experiencing objects from different perspectives. In the absence of a good tool, placing AOIs requires researchers to make continuous AOI adjustments frame-by-frame.

Currently, dynamic AOI placement is a time-consuming and labor-intensive process.

Aim of Study

This study compares time needed for automated and manual AOI placement in dynamic environments or with dynamic stimuli, utilizing iMotions’ AutoAOI module across five distinct use cases.

Methods

Manual AOI placement

- Draw a boundary around the AOI using various shapes.
- Update AOIs manually in each video frame where a spatial change occurs because of the object or person having moved.
- If the change occurs at a constant speed, the AOI between video frames and manual changes can be interpolated.



VS

Automated AOI placement

- Object segmentation mask is defined by the researcher on selected input frames.
- Segmentation created by a Segment Anything model, designed to run on edge devices¹, based on positive/negative user input points.
- Video Object Segmentation model² tracks the input object in the video and generate AOI data frame-by-frame.
- AOIs can be manually adjusted if needed.

Results



Figure 1. Time Comparison of Manual vs Automatic AOI placement in five use cases. Values are in seconds.

Conclusion: Automated AOI placement took less time than manual placement.

Video



GitHub References

1. MobileSAM: github.com/ChaoningZhang/MobileSAM
2. Cutie: github.com/hkchengrex/Cutie