

Using eye trackers to study cyclists' in real life traffic situation

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Background

Eye tracker technology is relatively well-proven in laboratory situations, but lighter and smaller devices now allow them to be used in field studies. In the ongoing study, we test eye trackers to study cyclist wayfinding behavior and signage information perception. In Norway, wayfinding signage for cyclists have traditionally followed signage principles for car users. However, as cyclists alternate between different road environments, it is reasonable to assume that cyclists have other information needs and wayfinding strategies than car users. There are few studies on how cyclists perceive and use signage information. By using eye trackers we can potentially get detailed information on how different signage solutions influence cyclists attention to other road user and potentially hazardous situations. To our knowledge, this is the first study to utilize eye tracking technology for this purpose.

Methods

A pilot study with field interviews and so called “commentary bicycling” sessions has been conducted. The latter, involving a wayfinding task while wearing a helmet mounted Go-Pro camera, allowed us to observe micro-level behavior and head movements. These data are used as input to inform new wayfinding solutions in Norway, where traditional signs are to be supplemented with pylons and markings in the roadway. To evaluate the new solutions, we explore the use of mobile eye-tracker devices in the field to study cyclists gaze behavior related to wayfinding elements, and how different contexts influence gaze direction. A solution for analyzing the data from the eye trackers with a machine learning software will be developed in preparation for the field trials.

Results

Pilot sessions with eye-tracker have been conducted and indicate that that cyclists gaze behavior varies considerably with the complexity of the traffic environment, and with the presence of competing visual elements such as alternative signage. Field trials with different wayfinding solutions will be carried out in April 2020, and results from the field studies will be presented at the conference. A methodological discussion on the utilization of eye tracker devices for field study purposes will also be presented.

Conclusion

New eye tracking technology is more flexible and gives new opportunities for field experiments, but also introduce new challenges in terms of data analysis. To avoid overwhelming complexity, careful consideration has to be made in terms of study design and delimitation of study scope