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From eye trackers on bicycle helmets, to webcams, to eye tracking via smartphone: Philipp Reiter and Madeleine Makaranets from eye square talk about the evolution of eye tracking and the advantages of the latest methods.



**Your webinar on May 18 is about the next evolutionary step in eye-tracking. Is that correct?**

**Philipp Reiter:** Yes, that is correct. We have been doing eye-tracking for 20 years now and in that time we have been able to compile an impressive eye-tracking data archive, which is probably one of the largest in the world. Originally, eye-tracking was tied to the lab, but modern head-mounted eye-trackers are making studies in the field increasingly convenient and easy. By the way, I like to remember one of the earlier stages of the evolution where we had to get inventive and combined the eye-tracker with a bicycle helmet.

Webcam eye-tracking was the first evolutionary step out of the lab, allowing participants to take part in studies at home, without any technical setups on our part.

With smartphone eye-tracking, the evolution continues and we can focus on the real user behavior on the device, where consumers spend most of their digital free time. As more companies make their websites mobile-first and social media becomes more significant in its role for advertising and online shopping, understanding smartphone usage is now more important than ever.

**In the webinar, you will discuss three usage scenarios of smartphone eye-tracking. What are those scenarios? And what does the new method accomplish in these contexts that it couldn't before, or didn't do so well?**

**Madeleine Makaranets:** A new technology can be experienced well in familiar scenarios that we and our customers have to deal with every day in our studies. We chose three examples: first, in the area of brand measurement, we tested the perception of ads and videos in their natural context. The ever-growing e-commerce sector is also becoming more and more important for market research, which is why our second scenario covers attention to different product details when shopping online. In our third example, we opted for a classic UX test procedure and had our study participants explore a website including filling out contact forms.

In fact, the new eye-tracking method alone does not make the difference yet. The secret is the combination of the technology with a controlled environment and experimental design. For 20 years, we have been developing realistic test environments for ad, shopper and UX studies that optimally reflect natural usage directly on the smartphone.

Today, our clients basically test their designs and prototypes on both devices, desktop and smartphone. In the past, we had to "clamp" the smartphone in a holder and place an

eye-tracker underneath to be able to measure attention or work with the head-mounted eye-tracker. The setup had to be stowed in a large suitcase and flown around the world. With smartphone eye-tracking technology, we can eliminate the need for mounting devices and head-mounted eye-trackers for in-home studies for the first time.

[Register here for the free webinar \(held in German\)](#)

**"Sophisticated selfie cameras and machine learning algorithms" pave the way for this new form of eye tracking, according to the announcement text. How is machine learning relevant to the process?**

**Philipp Reiter:** We always work very closely with partners on eye tracking. Preferably with Berlin partners like Pupil Labs or Oculid. The recognition of the face and the eyes is already complex enough for an algorithm, but calculating pupil movements on a gaze ray requires a very large number of training data sets, so that precise results are obtained even under difficult conditions. To ensure the highest possible accuracy, the technologies are also tested extensively in a wide variety of seating and lighting situations, as well as with the different optical characteristics of the study participants. It doesn't work entirely without calibration at the beginning, but that's okay.

**How exactly can you imagine the test setting? What does the subject need to pay attention to so that reasonable data can be recorded?**

**Madeleine Makaranets:** For such a study, the test subjects only need their normal smartphone and Internet access. In this respect, we have almost no hurdles in selecting the test subjects - all current phone models offer very good front cameras, which are even better than most webcams. To participate, study participants are asked to install an app, which then guides them step-by-step through the entire study, has an integrated Internet browser and records the data. Of course, subjects should not do the study on their way to the bakery or at night in the dark, and should provide sufficient lighting.

**How difficult is it to recruit people for such tests? Which smartphones are basically suitable for this?**

**Madeleine Makaranets:** For smartphones, we do not need to do another test, almost all devices that are not older than 3-4 years work. In general, we experience a good willingness to participate and the participants understand that the application is only installed for the duration of the study. The effort to get participants interested in such a study is comparable to a webcam eye-tracking study. An important component of successful acquisition and high participation rates is high transparency from the beginning: Answers to questions such as "What will be recorded?" and "How long will the study take?" help here.

**Does the technology come from eye square or do you have a cooperation partner?**

**Philipp Reiter:** Cooperation partners are of central importance for us here. For our various study scenarios, we work with almost all manufacturers of eye-tracking devices

- from ASL to Tobii. In the case of this study, we combined our in-context testing environments with Oculid's technology and are able to automate the analysis of the data.

### **Eye-Tracking: How deeply rooted is this topic in eye square's DNA?**

**Philipp Reiter:** Perception and visual attention are definitely part of our DNA. As psychologists, we have given System0 a high priority even before implicit and explicit processing. Almost nothing works in our digital world without visual attention. If you want to understand the moment of a contact, you can't rely on surveys alone.

**Madeleine Makaranets:** In this context, we have also established a "tribe" – an agile unit dedicated to development, innovation and promotion of knowledge transfer within the company – on the topic of System0. Here we are looking at how we can understand and investigate perception even better.

### **What do you say to our readers who are still thinking about whether to sign up for the webinar or not?**

**Madeleine Makaranets:** Phrases like "Believe what you see" ;) We look forward to the participation of all curious!