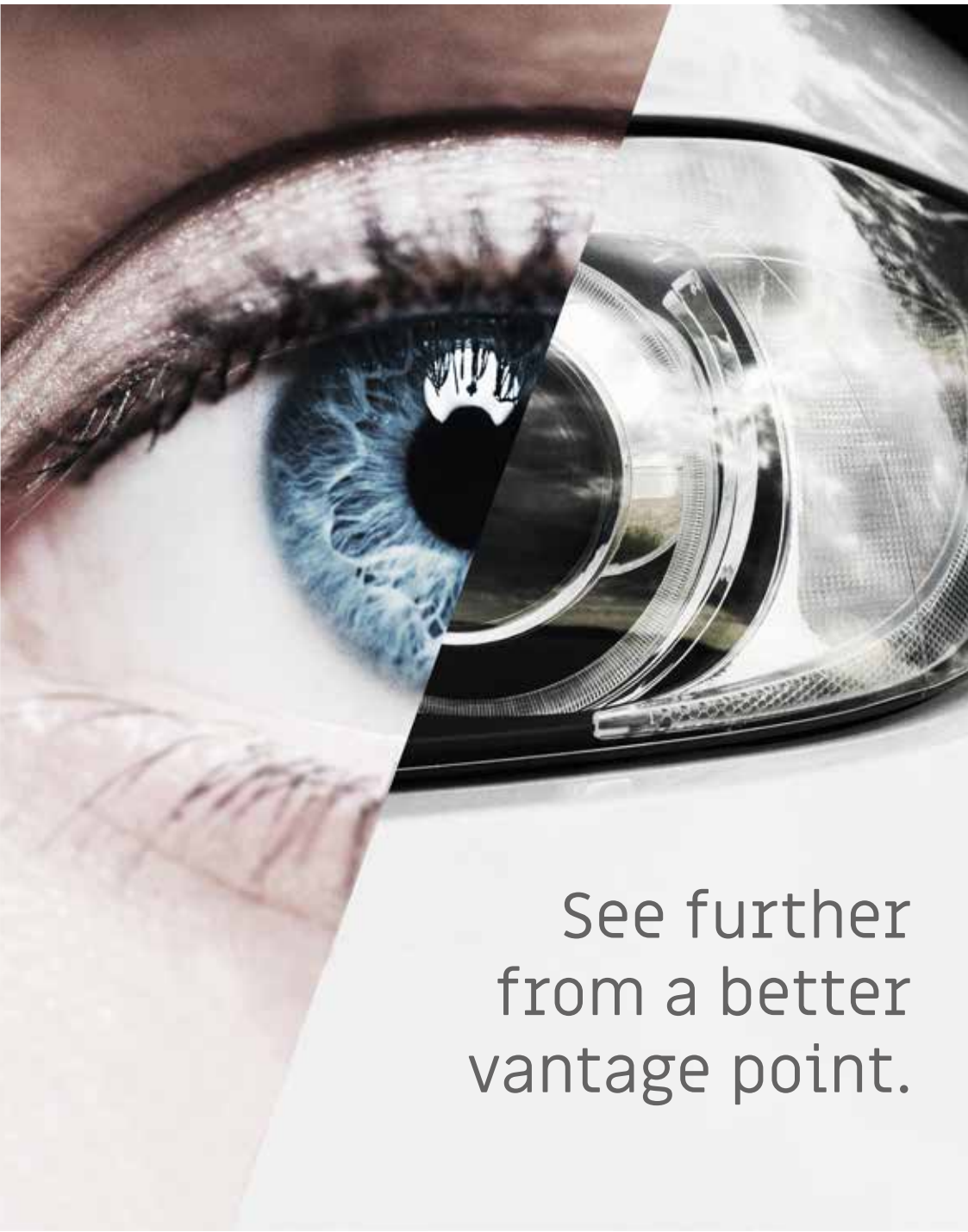
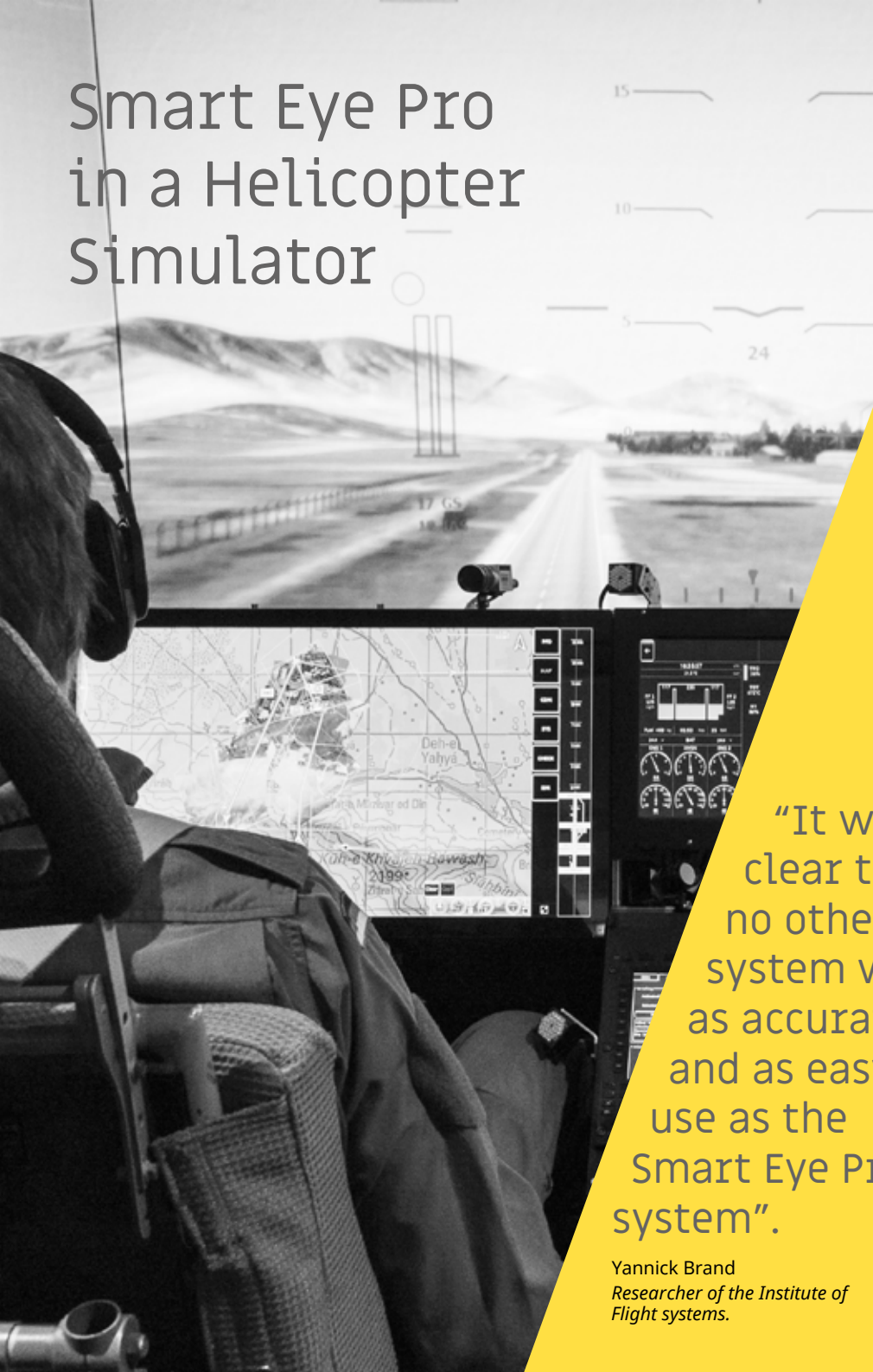
smart eye



See further from a better vantage point.

Smart Eye Pro in a Helicopter Simulator



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Yannick Brand
Researcher of the Institute of Flight systems.

Eye Tracker assists researchers in Human Factor Studies

The University of the German Armed Forces in Munich focuses on the scientific work and the academic study of the German's officers. The university offers a total of 18 programs of study in 10 departments and about 2800 students attended in 2017. The scientific facilities allow high-level research that is internationally competitive.

This study is conducted at the Institute of Flight Systems which is organized within the Aerospace Engineering Department.

The Research

Smart Eye Pro is used for estimating the current activity and workload of helicopter crews, based on gaze movement.
The study group has deployed the Smart Eye Pro system in a helicopter mission simulator. Two eye tracking systems are synchronized and used to cover the head orientation and gaze direction of two pilots simultaneously. The tracking data produced by Smart Eye Pro is forwarded live to an analysis system designed by the study group.

The analysis operates in two stages. The first stage recognizes when the gaze intersects with areas of interest, so called AOIs (representing for example buttons or instruments), enabled by the Smart Eye Pro 3D world model. The second stage performs a 2-dimensional error estimation for the coordinate of intersection, then matches the position with the internal representation of the currently showed object on the screen e.g. object on the tactical map. As a result, the analysis has produced a semantic gaze tracking application.

The complete tracking and analysis system produces statistics, visualizations and graphs that reports the activity and workload of the pilots during a mission. In addition, an adaptive associate system uses this information to automatically support the crew in optimizing their activity and to mitigate high workload.

Why Smart Eye Pro?

"We knew what we needed to get in order make the study successful. It had to be a remote eye tracking system that was scalable in terms of number of cameras, provided very accurate measurements and was easy to use." Yannick Brand, one of the researchers of the Institute of Flight Systems, has been part of the study from the beginning and as the project progressed he has become more and more convinced that Smart Eye was the right choice.

The study group looked at other eye trackers available on the market. However, none of them was an as good a fit as Smart Eye. "There are really only a few companies that has this kind of advanced solution. But it was clear that no other system was as accurate and as easy to use as the Smart Eye Pro system".

How has it been using Smart Eye Pro?

All through the study Smart Eye Pro has proven to be stable and robust. Thanks to both flexibility in HW configuration and a high amount of different output parameters provided by the SW algorithm Smart Eye Pro is, by the University of the German Armed Forces, considered to be a very versatile research instrument that can be utilized in different applications aimed at a range of studies (not only human factors).

"During the first set-up and in our initial learning process we thought Smart Eye Pro required quite some time for the calibration process. But when we saw the level of accuracy in gaze measurement it gave us we gladly took that extra time into account".

During 2017 Smart Eye was asked by the University to alter the behavior of the SW. "I was pleased by the amount of attention that we got" Yannick continues. "We received immediate interim help from the support team and the product management and development teams provided the final solution to our request in a timely manner.

Smart Eye is committed to delivering the most advanced nonintrusive 3D head and eye tracking system in the world. We strive to establish a standard of reliability and availability which is unparalleled in the industry. We are equally committed to accommodating even the most complex applications and demanding field of view requirements from a remote perspective, while still maintaining superior accuracy.

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