

System for assessing psychoemotional states via eye movement analysis

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Existing psychological theories connect the movements of human eyes with their reactions to external changes—what people see, hear, and feel. Analysing the eye direction allows researchers to compare observable human behaviors and internal states.

Currently, many institutions rely on the estimation of psychoemotional human states. It is especially important in schools and universities where teachers work with children and teenagers, and in jobs connected with high risks or life and death decisions.

Companies also use different methodologies of candidate diagnostics for hiring, including polygraph examinations, but if a subject does not feel comfortable, it can adversely affect test results. Another way of estimating psychoemotional internal states is the analysis of visual activity based on the interaction of the movement of an eye and the subject's reaction to external changes.

Specialists of the Institute of Cyber Intelligence Systems and the Engineering Centre at the National Research Nuclear University MEPhI (Russia) have developed a system for recognising vision activity and for estimation of psychophysiological human states. The system raises the precision of recognition of the human glance direction, allowing rational usage of hardware power.

The system consists of a video camera working in the near infrared range, and a new software package. Glasses with a camera record all the

movements of the subject's eye in real time. The system receives, transforms and transfers data from cameras to the research equipment, which conducts the main stages of pupil recognition and further interpretation of data in accordance with the subject's responses to questions. The system produces an informative report that can be used for further analysis.

The authors have conducted the correction of the software up to automated diagnostics level. The technology is going through additional testing, during which psychological theory is being assessed. The [system](#) is user friendly and shows high efficiency in the estimation of psychoemotional human states. It can be used for raising the accuracy of research connected with detection of human reactions in job interviews, analysis of group psychological climates, psychological tests and research, continuous monitoring of psychoemotional human states and marketing surveys.

The study has been published in AIP Conference Proceedings.

More information: AIP Conference Proceedings,
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