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Eye movements help diagnose neurological disorders

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PARIS – Researchers at the University of Southern California (USC) claimed they have defined a low-cost method for detecting certain neurological disorders through the study of eye movements.

Many high-prevalence neurological disorders involve attention, including attention deficit hyperactivity disorder (ADHD), autism spectrum disorder (ASD), and Parkinson's disease (PD).

Researchers asked participants in the study "to watch a video while their eye movements were recorded. Then, they compared the data to that of healthy controls with a computational model of visual attention. Using machine learning in a workflow inspired by natural vision, the researchers identified critical features that differentiate patients with neurological disorders from healthy controls.

With eye movement data from 108 subjects, the team identified Parkinson's Disease with 89.6 percent accuracy, and autism spectrum disorder with 89.6 percent accuracy. The technique provides new quantitative measures of how eye movements and gaze control are affected by specific disorders.

"For the first time, we can actually decode a person's visual behavior, without having to subject them to difficult tasks," said student Po-He Tseng and Professor Laurent Itti of USC's Viterbi School of Engineering.

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