عنوان مقاله:

Face analysis and gaze detection using image processing and machine learning

محل انتشار:

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خلاصه مقاله:

Today, image processing and the use of systems instead of humans are growing. Artificial intelligence issues have the greatest impact on this growth and prosperity. Artificial intelligence is divided into different categories that are used in most different fields and industries such as medicine, traffic. Gradually, in different industries, we see the introduction of artificial intelligence instead of using human resources, and in many industries, we see the help of various methods and algorithms of image processing to solve problems. This allows things to be done more quickly and also prevents human error. In this paper, one of the most important and new applications of image processing has been used to design and implement gaze estimation system using real-time images received from the webcam. The proposed system uses fast and efficient image processing algorithms with the help of OpenCV and dlib libraries. First, the area of the user's face is detected and tracked after being placed behind the computer. Then ۶۸ key points are extracted from the user's face and with the help of them and mathematical functions, the user's gaze is determined. By tracking the gaze and storing the points of interest, a ۲D histogram is obtained, which by combining this image with the background image, it can be determined which points the user has paid more attention to. Finally, with the help of three circles, the accuracy and overlap of the points of view and each circle is calculated, and by observing the final outputs, it can be concluded that this method has acceptable accuracy and this system can be used in various applications such as banner impact on sites, controlling and moving the mouse pointer, diagnosing motion sickness of .the eye, building systems for the cure of eye diseases, and many other areas and applications

کلمات کلیدی:

Gaze estimation, facial landmarks, python, OpenCV :