OGTA: Open Gaze Tracker and Analyzer A Remote Low Cost System Based on Off-the-Shelf Components and Open Source Modular Software

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Several academic and commercial eye tracking systems have evolved to the point that they can operate without contact with the user. In addition, they also permit free head movement (within reasonable limits) without losing tracking and maintaining a good accuracy (errors below 1 degree). However, there are still several aspects which require further improvement before these systems can be extensively used. These include price, accuracy, robustness, and ease of set-up and use. This work proposes a preliminary version of a remote eye tracking system which starts to deal with some of those critical points. To drastically reduce the costs, the system has been built by assembling low cost off-the-shelf components, and the cross-platform software has been developed based on an open source philosophy. Second, the accuracy in gaze detection has been improved through the Starburst algorithm. Last and importantly, the plug-in organization of the software architecture, which crucially distinguishes the proposed system from similar ones previously proposed in literature. This facilitates the addition of dedicated software modules designed to improve specific features according to the particular application at hand. Here we present the architecture of the system and preliminary results on the functioning and accuracy of the system.

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