

Augmented Reality Application To Analyze Eye Movement During Structural Inspection

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Visual inspection is one of the most conventional methods to perform Structural Health Monitoring (SHM). As the existing infrastructures are aging, the need to perform field inspection on these structures are also increasing. Inspectors are often expected to inspect and monitor as many critical structures as possible in the shortest amount of time possible. In such instances, inspectors can use some help of the state-of-art technology that are available to assist them perform inspection effectively and in an efficient manner. In this study, a complete framework of implementing Augmented Reality (AR) application of eye-tracking in field inspection has been established. First, the eye-tracking application has been developed to follow inspector's eye-gaze. Next, a cloud database has been created to store the eye movement data collected during inspection. Finally, an algorithm has been developed to give a score to the inspection. This score depends on the total number of saccades generated to inspect the area of interest of the structure. Researchers are calling it "Cover-it-all" approach. The AR-based inspection framework and application that has been developed in this study, provides a human-machine interface, and offers inspectors the opportunity to evaluate their work and help real-time decision making. This focused and intentional approach will decrease chances of human errors, improve the quality and reduce the duration of the inspection.