A Real-Time Change Detection System

Abstract:

Detecting changes in multiple images of the same scene has recently seen increased interest due to the many contemporary applications including smart security systems, smart homes, remote sensing, surveillance, medical diagnosis, weather forecasting, speed and distance measurement, post-disaster forensics and much more. These applications differ in the scale, nature, and speed of change. This paper presents an application of image processing techniques to implement a real-time change detection system. Change is identified by comparing the RGB representation of two consecutive frames captured in real-time. The detection threshold can be controlled to account for various luminance levels. The comparison result is passed through a filter before decision making to reduce false positives, especially at lower luminance conditions. The system is implemented with a MATLAB Graphical User interface with several controls to manage its operation and performance.