ENHANCING FIRE DETECTION AND RECOGNITION THROUGH VIRTUAL REALITY IMAGE ANALYSIS

A PROJECT REPORT

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ABSTRACT

Fire detection technology based on video images can avoid many flaws in conventional methods and detect fires. To achieve this, the support vector machine (SVM) method in machine learning theory has unique advantages, while rough set (RS) theory and SVM complement each other in application. Thus, a new classifier could be created by organically combining these methods to identify fires and provide fire warnings, yielding excellent noise suppression and promotion. The RS is used as the front-end system for the SVM method, yielding improved performance than only SVM. Recognition time is reduced, and recognition efficiency is improved. Experiments show that the RS-SVM classifier model based on parameter optimization proposed in our paper mitigates deficiencies in over fitting and determining local extremum with excellent reliability and stability, and enhances the forecast accuracy of fires. The method also reduces false fire-detection alarms and uses fire feature selection in virtual reality (VR) video images and fire detection and recognition.