On-line Home Security System Using Infrared Thermal Imaging

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ABSTRACT

This paper develops an on-line home security system for factory or building by using infrared thermal imaging. Through recognition techniques, this home security system could automatically inspect and classify intruders, including electric equipment, human, animals, and fires, such that burglars and fires can be found early and prevented beforehand. The statistical- geometric techniques are employed to extract features of temporal and spatial images, which are used as inputs of a neural-network classificator. Training algorithms are employed to tune all parameters in the neural network, including the output weights, the widths, and the centers of hidden nodes, thereby accelerating the learning convergence and improving the approximation accuracy. Finally, a practical home security system by infrared thermal imaging will be build to show that the proposed method has high accuracy in recognition.

Keywords : Infrared thermal imaging ; Image recognition ; Security system ; Neural network system

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