

A SUPPORT VECTOR MACHINE BASED DYNAMIC CLASSIFIER FOR FACE RECOGNITION

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ABSTRACT. *Most of the researches on support vector machine (SVM) based face recognition presume that the classifier, once trained, is static and thus unscalable, due to the fact that SVM is a supervised learning method. This paper introduces a novel SVM-based face recognition method, which circumvents this difficulty, by allowing “new” faces of existing or new persons to be added into the face database dynamically. In other words, the proposed method is capable of learning and recognizing faces that are not already in the face database. Our experimental results indicate that the accuracy rate of the proposed method ranges from 73.81% up to 100% and outperforms all the methods we evaluated. Moreover, this paper uses several different tests to analyze the performance of the proposed algorithm.*

Keywords: Support vector machine, Face recognition, Semi-supervised learning

1. Introduction. As one of the most useful applications of image analysis and understanding, face recognition has received significant attention over the past decade or so. A face recognition system is usually composed of three modules: face detection, feature extraction, and face recognition [1]. The face detection module is responsible for segmentation of the faces; the feature extraction module for extraction of the features from the face regions; and the face recognition module for recognition and verification.

In recent years, many researchers [2, 3, 4, 5] have worked hard on building face recognition systems that are as reliable as they can. Thus, most of the recent researches on face recognition have focused on increasing the accuracy rate of a face recognition system, which basically fall into two schools. The first school focuses on developing a more effective feature extraction module to reduce the influence of illumination, position, orientation, scale, and expression [6, 7, 8, 9, 10, 11, 12]. For instance, one is based on global feature