FACE RECOGNITION USING KERNEL CLASSIFIERS

MSC IN COMPUTER SCIENCE

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To my parents

Declaration

I, K. A. D. N. K. Wimalawarne hereby declare that the work included in this dissertation in part or whole has not been submitted for any other academic qualification at any institution.

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Supervisor

Abstract

Face recognitions remains to be one of the biggest challenges to the machine learning community. Over three decades of extensive research has been carried out in this field by many researchers. In spite of many face recognition methods developed, research on novel methods are needed to fulfill needs of modern applications.

In the recent past kernel methods have been successfully applied to face recognition. We present a novel approach in face recognition with informative vector machine, a sparse Gaussian process kernel classifier. Experiments with the ORL face database shows that recognition accuracies of both these algorithms to be comparable. But informative vector machine has the ability to provide more sparse solutions than support vector machines. We also found that using automatic relevance determination kernels which with informative vector machine provides a novel approach to dimension reduction in feature space. Overall, both sparse solutions and dimension reductions with informative vector machine reduces the storage space and computational cost while achieving a recognition accuracy close to support vector machines.

Keywords : Face recognition, Gaussian process, kernel classifier, informative vector machines, sparse, support vector machines

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