

MASTER'S THESIS

L1-norm local preserving projection and its application

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L1-norm Local Preserving Projection and its Application

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Abstract

As one of the most successful applications in image science and pattern recognition, face recognition has been a popular research topic for more than 30 years and many feasible techniques which have improved the recognition rate have been developed by researchers all over the world. In this thesis, we are interested in studying local preserving projection (LPP) methods. There are many important applications of these methods in image science and pattern recognition. The main idea of LPP methods is to perform dimension reduction for processing and recognition. Our work is to construct a new local preserving projection method that is based on L1-norm fidelity term instead of quadratic L2-norm fidelity term in the original LPP method. The main advantage of using L1-norm fidelity term is that the local preserving projection can be robust to outliers in data sets. In the thesis, we develop an efficient algorithm to solving the proposed optimization problem and apply the L1-norm local preserving projection method to face and iris recognition. Experimental results are reported and demonstrated that the proposed new model can provide better results in face and iris recognition, especially when face and iris data sets have occlusion and corruption.

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