

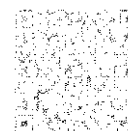
基於名次流形排序演算法進行 之行人再識別

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摘要

本研究提出一種基於資料排序觀念的流形排序演算法（Rank-based Manifold Learning），並應用於行人再識別的課題上。傳統上，樣本間距離量測或相似度計算使用L1 norm、L2 norm或餘弦相似性（Cosine Similarity）搭配熱核函數來達成。影像樣本在特徵空間中，不一定呈現常態分布，相同類別的樣本不會有群聚現象，因為以歐氏距離作為相似度計算方法，有部分同類別樣本的相似度會低於不同類別樣本。為了彌補相似度量測之不足，我們利用測試樣本與資料庫樣本的相似度進行排序，根據名次賦予每個資料庫樣本不同的權重值，再利用樣本間的權重關係找到測試樣本合適的流形空間，重新進行排序，提升測試樣本的名次。本研究使用QMUL underGround Re-identification資料庫進行演算法效能的評估。由實驗結果可以觀察到流形排序演算法提升了行人再識別的正確率。

關鍵詞：行人再識別、流形排序、排序量測、視訊監控、電腦視覺

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Person Re-identification Using Rank-based Manifold Ranking

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Abstract

In this paper, a rank-based manifold ranking (MR) algorithm is proposed for personal re-identification. In general cases, L1 norm, L2 norm, or cosinesimilarity metrics are frequently adopted for distance or similarity calculation with a heat kernel function. However, outliers in the distance-based scheme always impact the identification results even though the number of outliers is few. A rank-based weighting scheme is adopted in the MR algorithm instead of the distance-based metric. A benchmark dataset of video surveillance is evaluated. The experimental results are given to show the feasibility of the proposed method.

Keywords: person re-identification, manifold ranking, order-based metric, video surveillance, computer vision

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