**ETSIP020-2016-Local Fisher Discriminant Analysis for Pedestrian**

**Re-identiﬁcation**

**Abstract** -Metric learning methods, for person re-identiﬁcation, estimate a scaling for distances in a vector space that is optimized for picking out observations of the same individual. This paper presents an overlap approach to the pedestrian re-identiﬁcation problem that uses metric learning to improve the state-of-the-art performance on standard public datasets. Very high dimensional features are extracted from the source color image. A ﬁrst processing stage performs unsupervised PCA dimensionality reduction, constrained to maintain the redundancy in color-space representation. A second stage further reduces the dimensionality, using a Local Fisher Discriminant Analysis deﬁned by a training set. A regularization step is introduced to avoid singular matrices during this stage. The experiments conducted on three publicly available datasets conﬁrm that the proposed method outperforms the state-of-the-art performance, including all other known metric learning methods. Furthermore, the method is an effective way to process observations comprising multiple shots, and is non-iterative: the computation times are relatively modest. Finally, a novel statistic is derived to characterize the Match Characteristic: the normalized entropy reduction can be used to deﬁne the ’Proportion of Uncertainty Removed’ (PUR). This measure is invariant to test set size and provides an intuitive indication of performance.