Defense Announcement

Composite Kernel Dimension Reduction for Multi-Source Remote Sensing Image Analysis

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Multi-source remote sensing data has the potential to enable robust image analysis. These sources can be images taken from different sensors on the same region of interest, or multiple different types of diverse features extracted from the same sensor. Either way, composite kernel methods can effectively use information from different sources for classification tasks. In recent work, Angular Discriminant Analysis (ADA) was developed as a technique for effective supervised dimensionality reduction of hyperspectral images . In this thesis, we present a composite-kernel variant of locality preserving ADA (CKLADA) for multi-source remote sensing image analysis. Experiments using a dataset that contains hyperspectral imagery (HSI), light detection and ranging (LiDAR) data and extended multi-attribute profile (EMAP) features, and a single-sensor dataset that contains HSI and EMAP features were conducted whose results show that proposed method provides very effective feature reduction for multi-source remotely sensed data.