Feature Extraction: Algebraic and Geometrical Perspectives

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Abstract

In this talk, several feature extraction techniques will be introduced from two cues: algebraic feature extraction and geometrical feature extraction methods. For algebraic feature extraction, Principal Component Analysis (PCA), Linear Discriminant Analysis (LDA), Kernel Discriminant Analysis (KDA), Sparse representation and their variants will be introduced. For geometrical feature extraction, Contour Points Distribution Histogram (CPDH), Active Shape Model (ASM), Active Appearance Model (AAM), ASM+AAM, and their variants will be presented. Typical applications of these feature extraction methods will be presented including face recognition, image fusion, image retrieval, and target tracking, etc. The main aim of this talk is to introduce my main work in pattern recognition and computer vision, which hopefully ignites discussions, and future development of feature extraction.