

**Multi-View Missing Data Completion**

**Abstract:**

A growing number of multi-view data arises naturally in many scenarios, including medical diagnosis, webpage classification, and multimedia analysis. A challenge in learning from multi-view data is that not all instances are fully represented in all views, resulting in missing view data. In this paper, we focus on feature-level completion for missing view of multi-view data. Aiming at capturing both semantic complementarity and identical distribution among different views, an Isomorphic Linear Correlation Analysis (ILCA) method is proposed to linearly map multi-view data to a feature-isomorphic subspace through learning a set of excellent isomorphic features, thereby unfolding the shared information from different views. Meanwhile, we assume that missing view obeys normal distribution. Then the missing view data matrix can be modeled as a low-rank component plus a sparse contribution. Thus, to accomplish missing view completion, an Identical Distribution Pursuit Completion (IDPC) model based on the learned features is proposed, in which the identical distribution constraint of missing view to the other available one in the feature-isomorphic subspace is fully exploited. Comprehensive experiments on several multi-view datasets demonstrate that our proposed framework yields promising results.

**Existing System:**

Meanwhile, for the multi-view data in the featureisomorphic subspace, it can be assumed that they are under both semantic complementarity and identical distribution constraints. The complementarity constraint refers to the semantic complementarity among different views that makes much more the consistent information from different views fully contained in the isomorphic representations of multi-view data.

Note that the consistent information is the commonality among the heterogeneous representations from different views. Unlike the semantic complementarity constraint, the identical distribution constraint takes high distributive similarity among different views which can group the samples of the same class fromthe same view together while keeping the instances from different categories away from each other simultaneously.

Hence, another issue we need further to deal with for completing missing view of multi-view data is to recover missing view under both semantic complementarity and identical distribution constraints.

**Proposed System:**

A general feature-level framework for completing missing view to obtain the complex representations for multi-view data is proposed. In this framework, a feature-isomorphic subspace is learned to build a bridge between multiple heterogeneous low-level feature spaces.

To build a feature-isomorphic subspace to capture both semantic complementarity and identical distribution among different views, we propose a novel Isomorphic Linear Correlation Analysis (ILCA) model with maximum neighbourhood criterion and orthogonal constraints, unfolding the shared information from different views. The maximum neighbourhood criterion in ILCA takes charge of highly correlating the learned features with the class, and the correlations among the features can be removed by the orthogonal constraints. Thus, multiple heterogeneous lowlevel feature spaces are linearly projected into a feature-isomorphic subspace through a set of learned excellent isomorphic features.