Dimensionality Reduction Using Latent Variable across the Domains in Recommender System

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***Abstract*—Dimensionality reduction plays an important role in big data analytics and machine learning for the past decades. While exploring the large volumes of data, it is necessary to perform the larger computation. In order to overcome this, a novel latent variable based dimensionality reduction across the domains in Recommender System (RS) is proposed. Firstly, we define the latent class corresponding to the attributes from two domains and user profiles. Then many-to-one mapping of attributes to a latent class variable is achieved. Finally, the entire data variables are reduced to five latent class variables and sharing the knowledge across the domains. The overall dimensionality reduction is very useful for easy processing of data and reducing the processing time in various applications. Compared with the traditional dimensionality reduction method, the proposed method discovers the hidden variable from the observed variable without any loss of information.**

***Keywords*—Dimensionality Reduction, Latent Variable, Attribute Mapping, Cross-Domain Analysis, Recommender System**

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