



Multi-view Latent Learning Applied to Fashion Industry

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Abstract

Demand forecasting is one of the main challenges for retailers and wholesalers in any industry. Proper demand forecasting gives business valuable information about potential profits and helps managers in taking targeted decisions on business growth strategies. Nowadays almost all organizations use different data sources or databases for nearly every aspect of their operations so that the knowledge on products on sale belongs to several independent views. The methodology described in this paper addresses the issue of product demand forecasting in fashion industry exploiting a multi-view learning approach. In particular, we show how the integration and connection among multiple views improves results accuracy. In real-life applications not all the views are usually available before a product is put on the market but the utility of a proper demand forecasting increases if the prediction is available before the product launch. We show that missing views can be reconstructed by means of common latent factors; in particular, this paper presents a learning procedure that describes the connection between different views. This connection allows data integration from multiple sources and can be extended to the special case of partial data representation. The nearest neighbors in the latent space play a special role for this process and for a general improvement of the forecast quality. We experimented the proposed methodology on real fashion retail sales showing that multi-view latent learning provides a system that is able to reconstruct satisfactorily non yet available views and can be used to predict the volumes of sales well before the goods are put on the market.