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Efficient Clothing Fashion Prediction using Machine Learning

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Abstract: *Fashion trend forecasting is a crucial task for both academia and industry. Although some efforts have been devoted to tackling this challenging task, they only studied limited fashion elements with highly seasonal or simple patterns, which could hardly reveal the real fashion trends. Towards insightful fashion trend forecasting, this work focuses on investigating fine-grained fashion element trends for specific user groups. We first contribute a large-scale fashion trend dataset (FIT) collected from social media with extracted time series fashion element records and user information. Furthermore, to effectively model the time series data of fashion elements with rather complex patterns, we propose a Machine Learning which takes advantage of the capability in modeling time series data. Moreover, it leverages internal and external knowledge in fashion domain that affects the time-series patterns of fashion element trends. Such incorporation of domain knowledge further enhances the deep learning model in capturing the patterns of specific fashion elements and predicting the future trends. Extensive experiments demonstrate that the proposed ML model can effectively capture the complicated patterns of objective fashion elements, therefore making preferable fashion trend forecast.*

Keywords: Fashion trend

I. INTRODUCTION

In the Internet era, with the popularity of websites and apps such as Google, Taobao and Instagram, unstructured data such as images and videos is exploding every day at an alarming rate. For these massive images with rich visual information, how to easily, quickly and accurately search for the images that users need or are interested in from the vast image database of the fashion industry is a difficult problem in the field of multimedia information search, and 'searching by image' is the key technology to solve this problem. With the further development and improvement of all aspects of the apparel industry, trend prediction and product development can also become more convenient and scientific through the participation of artificial intelligence.

Shi Yingjie et al. combined with the characteristics of clothing fashion data and proposed a basic framework for clothing fashion analysis based on machine learning. Trend forecasting and product development not only need to aggregate similar content to demonstrate the popularity of elements, but also need to expand on the basis of existing materials to find more research and application space. 'Searching by image' is widely used on the current Internet, and is often used to retrieve similar pictures through existing picture materials to achieve the effect of updating picture quality, retrieving picture sources or collecting relevant text introductions. Image feature extraction algorithms are generally divided into global features and local features. In recent years, it is more common to use local features for classification and retrieval.

II. LITEARATURE SURVEY

2.1 From Street Photos to Fashion Trends: Leveraging User-Provided Noisy Labels for Fashion Understanding Fu-Hsien Huang; Hsin-Min Lu; Yao-Wen Hsu

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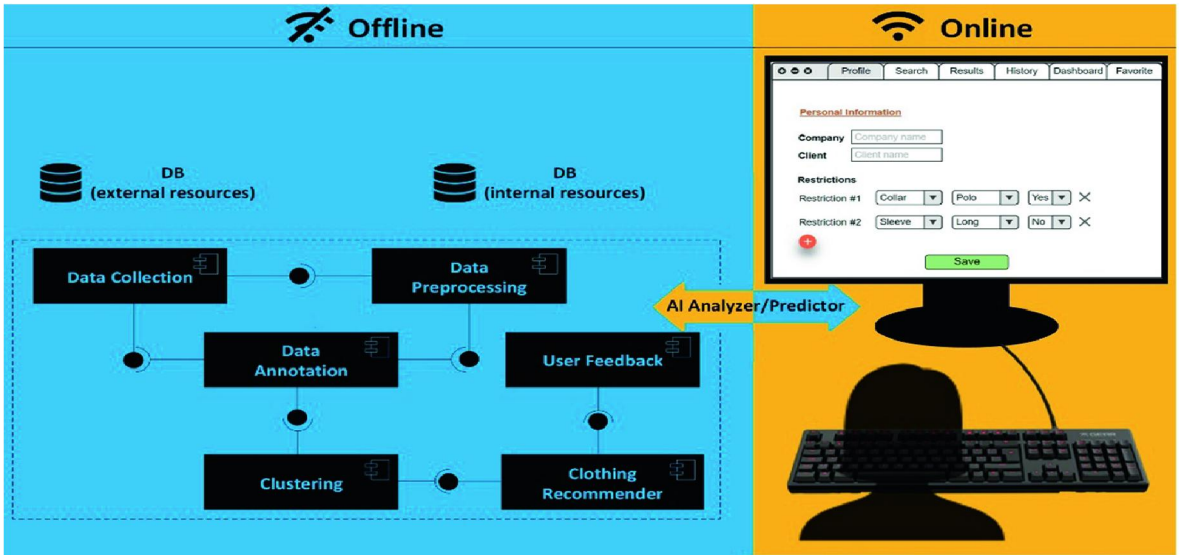
There is increased interest in using street photos to understand fashion trends.[1] Though street photos usually contain rich clothing information, there are several technical challenges to their analysis. First, street photos collected from social media sites often contain user-provided noisy labels, and training models using these labels may deteriorate prediction performance.[2] Second, most existing methods predict multiple clothing attributes individually and do not consider the potential to share knowledge between related tasks. In addition to these technical challenges, most fashion image datasets created by previous studies focus on American and European fashion styles. [3]To address these technical challenges and understand fashion trends in Asia, we created RichWear, a new street fashion dataset containing 322,198 images with various text labels for fashion analysis. This dataset, collected from an Asian social network site, focuses on street styles in Japan and other Asian areas.[4]RichWear provides a subset of expert-verified labels in addition to user-provided noisy labels for model training and evaluation. We propose the Fashion Attributes Recognition Network (FARNet) based on the multi-task learning framework to improve fashion recognition. Instead of predicting each clothing attribute individually, FARNet predicts three types of attributes simultaneously[5], and, once trained, this network leverages the noisy labels and generates corrected labels based on the input images. Experimental results show that this approach significantly outperforms existing methods. Applying the trained model to the RichWear dataset, we report Asian fashion trends and street styles based on predicted labels and image clusters from latent feature vectors.

III. SYSTEM REQUIREMENTS

Support Vector Machine (SVM):

To detect an ideal hyperplane for different distinct examples in a high dimensional space is the main process of the SVM. To fulfill this model there is more than one hyperplane. This process depends upon the bolster vector which the information that lies nearest on the closed surface and coordinating with the ideal choice surface. It performs classification by planning the input vectors into a high dimensional space and constructing the hyperplane to separate the data. This strategy is mainly used to solve a quadratic programming problem and non-convex, unconstrained minimization problem. The SVM is the most effective method in the classifier process.

SYSTEM ARCHITECTURE



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Component Diagram

Figure 2. Example images of different categories and attributes in DeepFashion. The attributes form five groups: texture, fabric, shape, part, and style.

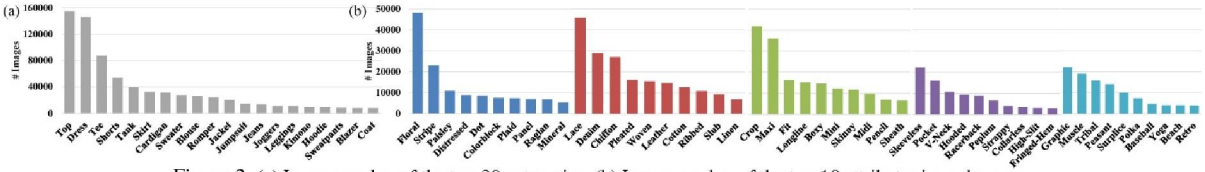
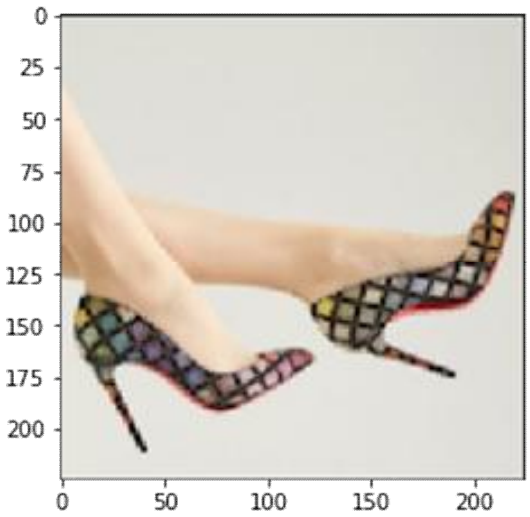


Figure 3. (a) Image number of the top-20 categories. (b) Image number of the top-10 attributes in each group.

IV. OUTPUT SCREEN

Original product:



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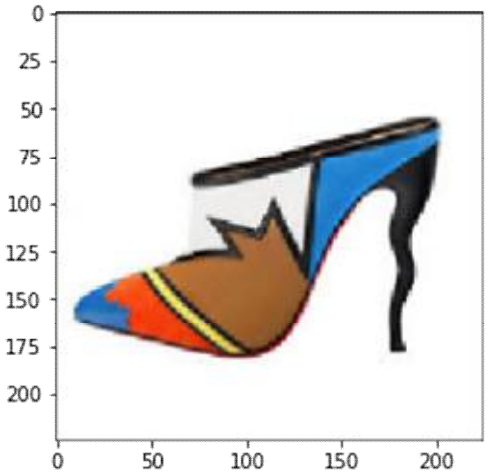
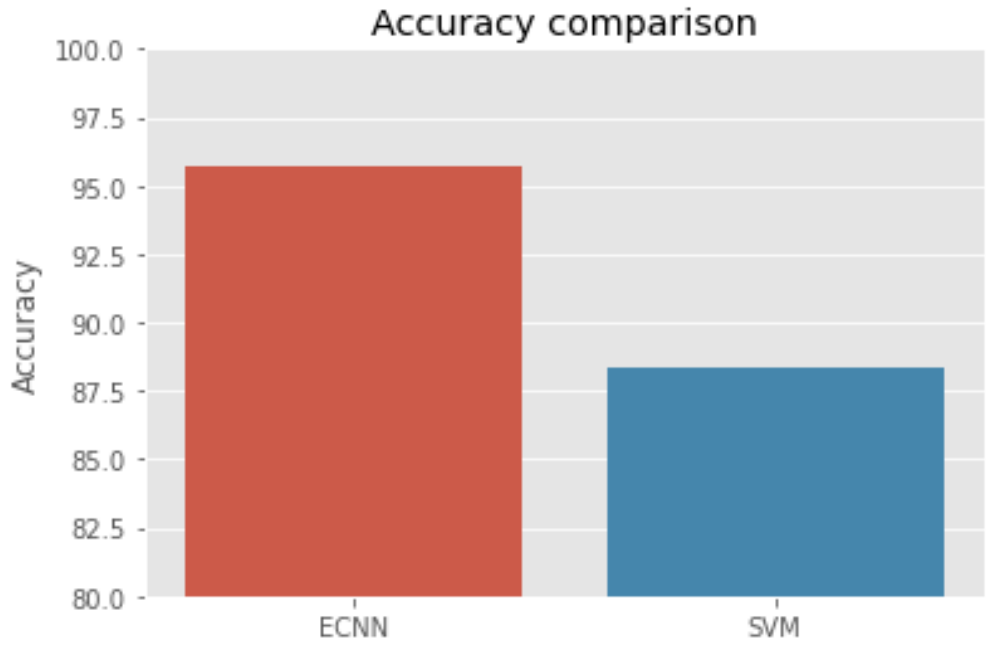
Most similar products



similarity score : 0.5544691



IV. CONCLUSION

This project addresses the fashion trend forecasting problem based on social media, aiming to mine the complex patterns in the historical time-series records of fashion elements and accordingly predict the future trends. An effective model, Machine Learning classifier is proposed to capture the complex patterns in the time-series data and forecast fashion trends.

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