# Apparel Wearing Marketing Self-Media System

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**Abstract.** With the development of the Internet, people's access to information is also changing dramatically. Self-media has emerged in the background of such an era and gradually evolved into a network sales model, where brand designers meticulously market clothing goods in multiple ways through graphic sets, videos and live broadcasts, which is more conducive to clothing sales and brand story promotion, while allowing for in-depth discussions with consumers. In order to improve consumer retentiona, it is necessary to provide professional and detailed clothing recommendations. Since clothing recommendations require detailed labeling, manual labeling is time-consuming and labor-intensive, and requires label recognition to reduce workload. Therefore, we designed and developed a apparel wearing marketing self media system to provide multi-faceted services for consumers, brands and designers, and to create an exchange community to enhance the interactive experience of consumer shopping scenarios, in addition to providing technical services such as live video, logistics tracking, settlement and return to enhance the digital operation capability of the platform.

**Keywords-**digital services; wearing recommendation; marketing; self-publishing

## 1 Introduction

Under traditional network marketing, consumers mainly obtain clothing information in flat forms such as images and texts, but the self-media marketing model has more diverse expressions such as video and live streaming, with better communication effects, a larger user base, and lower marketing costs [1]. Due to people's biased understanding of fashion trends and lack of professional clothing matching knowledge, improving the aesthetic level of the public

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and providing professional clothing matching has become the key to the survival and development of various clothing brands [2]. Combined with the endless apparel products, cumbersome and complex categories and labels, it is necessary to improve the innovation channel, alleviate the difficulty of launching apparel products for the resident merchants, and rapidly improve the digital capability [3].

Based on the above problems, an apparel wearing marketing self-media system was designed and developed to provide designers with a platform to disseminate design concepts and guide trends, provide consumers with specialized and detailed clothing recommendation services, and simplify the process of launching clothing product for brands. In addition, the system provides a social interaction channel for consumers to share what they are wearing in different scenarios, and the sharing and evaluation of consumers are more intuitive and real compared to clothing designers and brands themselves. On this basis, it further improves a series of platform technical support services such as live video, payment, logistics, order management, financial statistics, and store decoration.

## 2 Designer services

The apparel wearing marketing self-media system provides a channel for designers to disseminate their design concepts and guide the trend, and designers can disseminate their design concepts and design works through various forms to attract the attention of the promotion target according to their unique style positioning. The promotion target is not only the target consumer group, but also the brand contacts and the audience of brand promotion [4]. This can improve the aesthetic level of the public to a certain extent, and also attract brands to cooperate with designers.

Designers should first choose the posting form when publishing content, including two kinds of graphic collections and videos: graphic collections in the form of a combination of images and text, generally selected images of the same theme, with the corresponding theme and text description; videos are mainly short videos, after uploading the video designers need to further fill in the relevant description and select the cover (default first frame image). Designers can also associate their design works in the post. The specific posting process is shown in Figure 1.

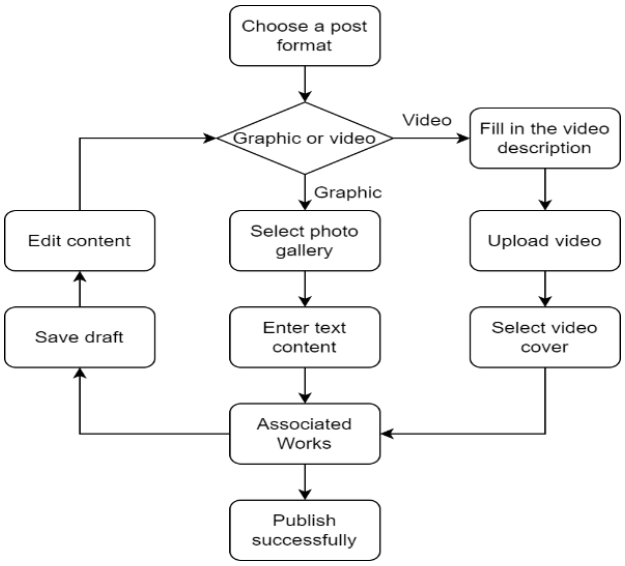


**Figure 1.** Post process

To enhance compatibility, the system uses the vue-video-palyer player plugin, which supports playing videos of various formats and can set various parameters such as playback speed and playback format. The specific parameters are shown in Table 1.

**Table 1.** Parameter setting table

| Parameter | Description | Value |
|---|---|---|
| type | supported video formats | MKV, FLV, MP4, WMV |
| Play back Rates | playback speed | 0.7, 1.0, 1.5, 2.0 |
| Auto paly | play automatically or not | Default false |
| loop | loop or not | Default false |
| Play Toggle | support pause or not | Default true |
| Fullscreen Toggle | support full-screen playback or not | Default true |
| Progress Control | support progress bar drag or not | Default true |
| Remaining Time | show remaining time or not | Default true |

Take short video as an example, the video publishing interface and the post display interface are shown in Figure 2.

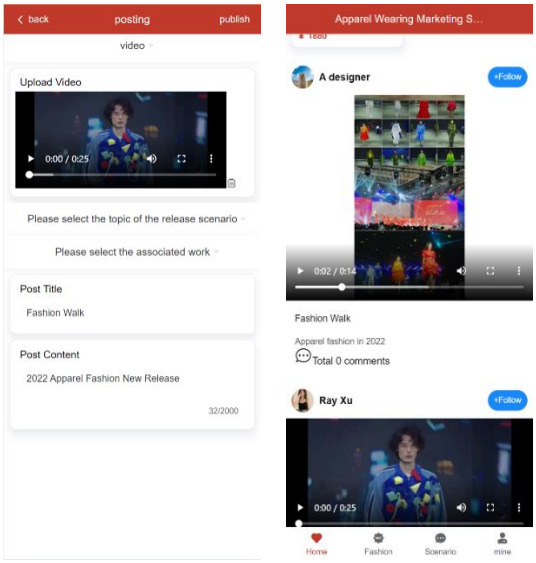


**Figure 2.** Posting-related interfaces

## 3 Consumer services

The system provides two professional clothing recommendation services for consumers, which are clothing matching recommendation and appearance design recommendation.

The clothing matching recommendation is mainly based on the collocation rules between the clothing information elements, and comprehensively considers clothing categories, clothing styles, color elements and seasonal elements. First of all, the clothing is filtered by seasonal attributes, and then matched

according to the category, such as matching upper and lower garments, matching inner and outer garments, and finally considering the matching degree between styles and combining with color elements to recommend clothing products. For example, blue washed summer jeans go best with a white short-sleeved shirt.

The appearance design recommendation is mainly based on the matching rules of human characteristic elements and clothing information elements, filtering clothing categories by gender, and then comprehensively considering the matching of skin color with the main color of clothing, the matching of face shape with the collar shape of clothing, and the matching of body shape with the style of clothing, and finally providing consumers with accurate personalized recommendations by combining with the occasion conditions. The clothing recommendation process is shown in Figure 3.

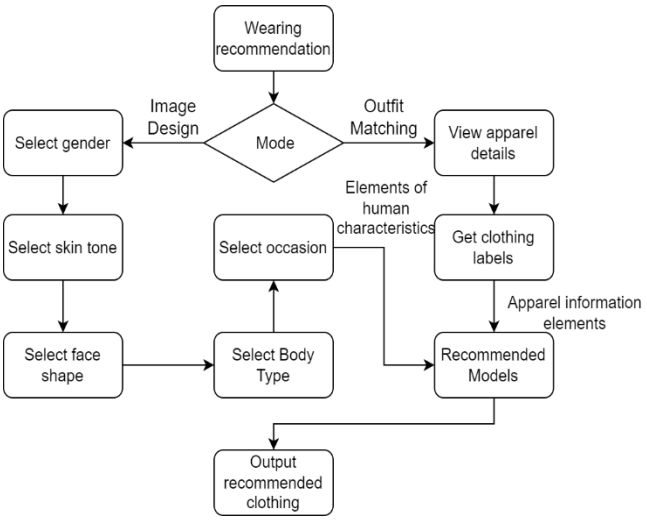


**Figure 3.** Apparel recommendation process

The recommended model is based on the experiences of several clothing experts in matching, extracting clothing information elements (category, color, silhouette, etc.), human characteristics elements (face shape, skin color, body type, etc.), and clarifying and quantifying the matching rules between clothing and clothing, clothing and people. Among them, clothing categories are divided into 6 major categories and 107 sub-categories, and clothing colors are divided into 35 colored categories and 2 black and white extreme colors. After the system inputs the clothing information elements or the human body feature information provided by consumers into the recommendation model, the clothing label results are obtained, and then combine the occasion conditions to find the clothing database and filter the comprehensive matching degree TOP-10 clothing. The recommendation interfaces are shown in Figure 4.

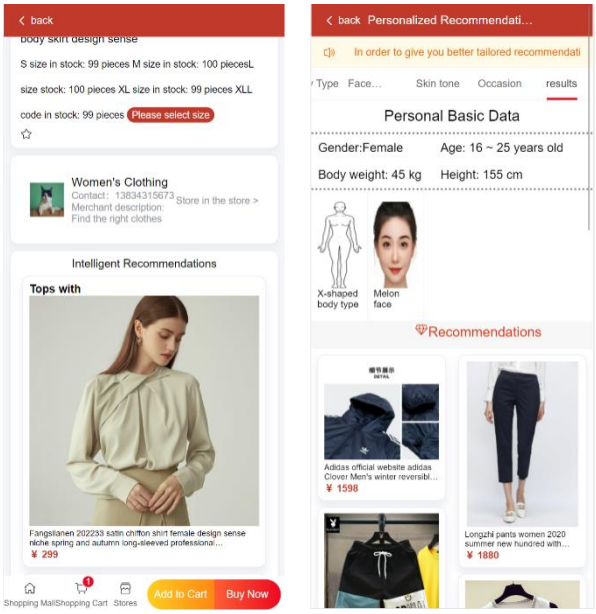


**Figure 4.** Apparel recommendation interfaces

## 4 Brand services

Due to the rapid update and iteration of clothing products, coupled with the brands of clothing label definition has a certain subjectivity, if clothing product is launched manually, labor and material costs are high and prone to error, so the system provides intelligent and efficient clothing launch services for brands. Brand owners need to complete the following three steps in order to launch clothing products.

- upload clothing product pictures and videos, pictures can be uploaded more than one, by default, the first picture for the main picture of clothing, pictures and videos can be previewed and edited after successful upload.
- check the clothing label and fill in the clothing description, after completing the first step, the system will automatically mark the label according to the main picture of the clothing, manually verify and correct the label result, and then fill in the clothing description.
- improve the basic information of clothing products, including the name, price, inventory and other information. Click the submit button to complete the clothing launch operation. The process of launching clothing is shown in Figure 5.

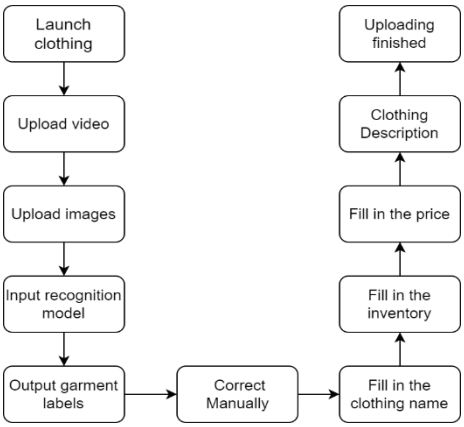


**Figure 5.** Launch apparel product process

In order to match with human body features, the clothing labels are divided into multiple dimensions from style, occasion, and style, and the granularity is refined to attributes such as color, collar type, sleeve length, and trouser length, for example, color is divided into 37 kinds, and the workload is large and subjective by manual labeling, with poor error tolerance. In order to achieve accurate recommendation, the data set is enriched, and the recognition training is carried out through deep learning, so that the computer can recognize the vast majority of label parameters.

In the process of automatic labeling, two multi-label multi-task classification models are designed based on Inception-v4 [4], namely, a length-based label recognition model and a design-based label recognition model, where length-based labels include garment length, sleeve length, etc., and design-based labels include collar type, silhouette, etc. The tasks in each model share convolutional and pooling layers, and different fully connected layers correspond to different tasks, which greatly reduces the computational effort. The garment images are then fed into the trained model by data enhancement operations such as flipping and folding to obtain label classification results and output.

Take launching a shirt clothing product as an example, the interface is shown in Figure 6.

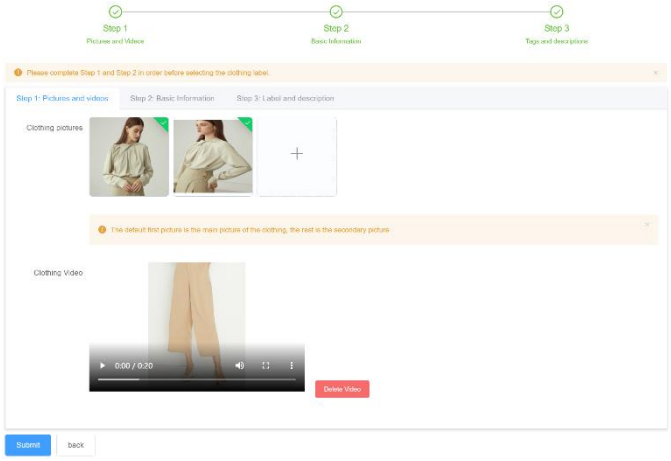


**Figure 6.** Upload interface

Input the main picture of the shirt into the label recognition model, the output the label results such as stand-up collar, self-cultivation, mid-length, long-sleeve, etc. and visualize them in the the label management page, then manually verify and correct the label results, and finally fill in the clothing name, price, size, inventory, etc. information to complete the listing operation. The label verification interface is shown in Figure 7.

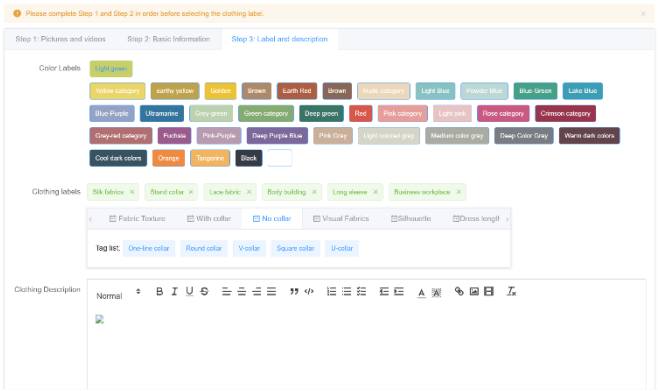


**Figure 7.** Tag correction interface

## 5 Community services

Community services break the traditional one-way information dissemination mode with the characteristics of strong interaction and wide dissemination of self-media [6], It allows

consumers to share their opinions on dressing in different scenarios in their daily lives, increasing user viscosity and trust. Consumers' comments, collections, and sharing information in the process of dissemination, to a certain extent, materialize the brand image, forming a non-negligible advertising effect [5]. Based on the feedback information, brands can analyze the current consumer preferences to effectively disseminate and accurately promote, so that consumers can enjoy a more professional and refined service experience, which is conducive to the cycle of "content - community - consumption" and realize the transformation of reading value to commercial value [6]. When consumers share their outfit insights, they need to select a scene category, upload pictures or videos and add text descriptions, and finally associate related products to complete the sharing. The shared content is displayed in the corresponding column according to the scene category, and other users can browse, collect, comment and reply. The sharing process is shown in Figure 8.

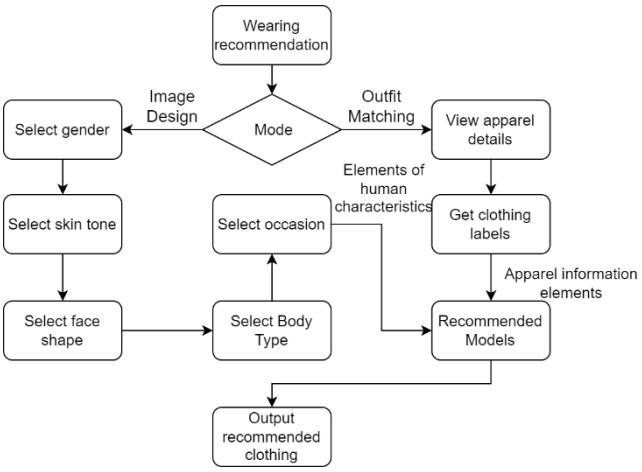


**Figure 8.** Sharing process

The development process adopts the MVVM model [7], the front-end page is developed using the Vue.js [8] framework, and the back-end adopts the SpringBoot framework for functional implementation. The front-end access to the back-end interface uses Restful API interface specification, and the front-end and back-end data interaction uses Json format. The interactive interface is friendly, compatible with different resolutions, supports different devices to browse HTML5 pages, responsive layout provides users with good visual effects and convenient services. Taking sharing work commute wear as an example, the scene topic release interface is shown in Figure 9.

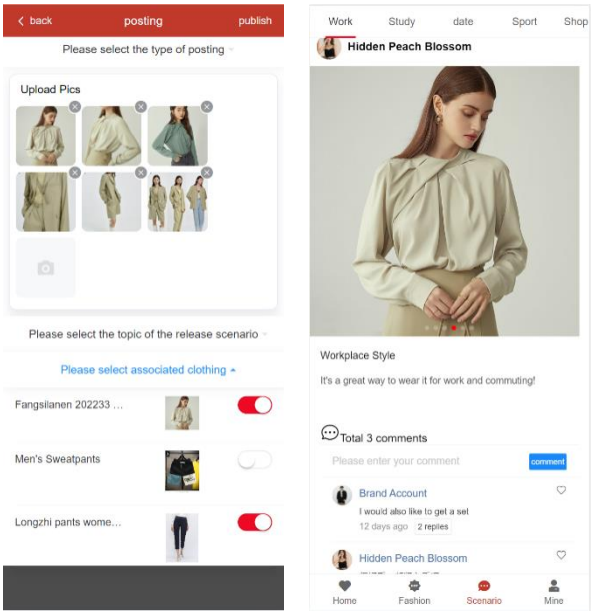


**Figure 9.** Topic publishing interfaces

The system also provides a series of platform technology services such as live video, payment, logistics tracking, order management, financial statistics, and store decoration.

### 5.1 Live video service

In terms of technical implementation, when a brand initiates a live broadcast, the backend calls the live broadcast interface to obtain the push stream address, and uses the streaming media transmission protocol to transmit the H.264 [9] encoded data, the streaming server will distribute the content, and then specifies the playback address through the playback tool to decode the streaming data and display the live screen in real time. Considering the live streaming delay and support for HTML5 [10], RTMP protocol is used in the live streaming push process, and both RTMP and HLS are used in the live streaming pull process. The live video link process is shown in Figure 10.

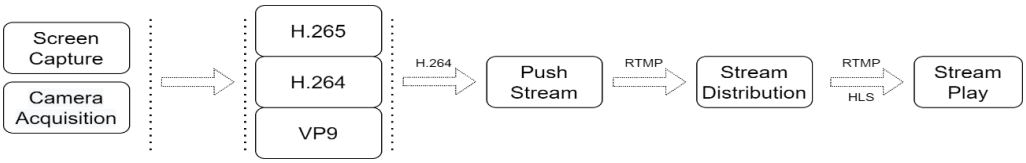


**Figure 10.** Live streaming process

### 5.2 Payment services

for security reasons involving payments, mature payment interfaces are used for implementation [11]. Third-party payments such as WeChat and Alipay will provide complete access guidelines and API lists for payment products.

According to the access specifications of the third-party payment companies, the corresponding language is selected to complete the access coupling of order payment, order inquiry, order closure, payment call-up, payment notification, and refund application, so as to realize the payment service.

### 5.3 Logistics tracking service

Consumers and brands can track transportation logistics in real time through the courier bill number, inquire about the delivery information, location information, status information,

flow through information, etc. The whole process is transparently managed, and real-time attention is paid to the progress of each link, which is convenient for consumers and also beneficial for brands to identify the reasons why goods are not delivered in time, improve the accuracy and timeliness of logistics and transportation, and enhance the service level of brands.

### 5.4 Order management services

including order viewing, status modification, goods delivery, goods return and exchange, order settlement and other services. The resident merchant can view the order list and order details according to the order generation time or order status; the order will be updated to different status with the operation of consumer's payment, order cancellation and receipt confirmation; after successful payment, the brand merchant can contact the logistics company for shipment and enter the courier bill number into the order information for future inquiry management; the brand merchant can start the return and exchange process after agreeing to the consumer's return application. After the consumer confirms receipt of the goods, the system will settle the order and hand over the transaction money to the brand.

### 5.5 Financial statistics service

For a more intuitive understanding of sales details, the system provides financial statistics services to display sales by apparel category. Financial statements of sales can also be displayed by day, week, month or custom time period. Chart visualization is realized through Echarts.

### 5.6 Store decoration services

Provide brands with decoration services such as modifying store colors and styles, customizing activity boards, modifying store announcements and replacing store icons to achieve store differentiation and attract consumers to browse and consume.

## 6 Conclusion

Apparel wearing marketing self-media system with data and content as the core, integration of "goods + interaction + logistics + service" new marketing model, to serve the designers, consumers, brands. With the help of various forms of self-media expression to spread the

designer's design concept and guide the trend, the use of deep learning technology to simplify the brand on the shelves of clothing process, based on clothing experts wear rules to provide consumers with professional clothing recommendation services. It builds an exchange community, optimizes the interactive shopping experience of consumers, materializes the brand image and also improves the viscosity of consumers, which is conducive to value realization. In addition, it provides platform services such as live video streaming, settlement, logistics, return and exchange, and runs through the industry chain of marketing, payment, distribution and after-sales service to enhance multi-faceted digital operation capabilities.

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