# Smart Fashion Recommender Application

**ABSTRACT:**

In recent years, the textile and fashion industries have witnessed an enormous amount of growth in fast fashion. On e-commerce platforms, where numerous choices are available, an efficient recommendation system is required to sort, order, and efficiently convey relevant product content or information to users. Image-based fashion recommendation systems (FRSs) have attracted a huge amount of attention from fast fashion retailers as they provide a personalized shopping experience to consumers. With the technological advancements, this branch of artificial intelligence exhibits a tremendous amount of potential in image processing, parsing, classification, and segmentation. Despite its huge potential, the number of academic articles on this topic is limited. The available studies do not provide a rigorous review of fashion recommendation systems and the corresponding filtering techniques. To the best of the authors knowledge, this is the first scholarly article to review the state-of-the-art fashion recommendation systems and the corresponding filtering techniques. In addition, this review also explores various potential models that could be implemented to develop fashion recommendation systems in the future. This paper will help researchers, academics, and practitioners who are interested in machine learning, computer vision, and fashion retailing to understand the characteristics of the different fashion recommendation systems.

# LITERATURE SURVEY

**1.1 TITLE:** Scenery-Based Fashion Recommendation with Cross-Domain Generative Adversarial Networks

**AUTHOR:** Sang-Young Jo; Sun-Hye Jang; Hee-Eun Cho; Jin-Woo Jeong

**DESCRIPTION:**

To build an effective fashion recommendation system is a still challenging issue due to its high complexity. Previous research works generally have focused on how to provide fashion items visually similar to the user's current fashion taste. However, a scenery (natural landscape) around users is also an important affective factor in recommending fashions. This paper presents a novel system to recommend fashion designs that fit target sceneries. To address this, the exemplar photos regarding the target landscape are first collected from the database. Afterwards, a cross-domain generative adversarial network (GAN) is applied to generate fashion designs from the sceneries. The experimental results demonstrate the feasibility of the proposed system and imply further research directions.

**1.2 TITLE:** Visual Based Prediction of Physical Characteristics for a Smart Fashion System

**AUTHOR:** Sophie Xiaofan Liu; Bingju Guo; Xiang Fang; Joshua C. Williams

**DESCRIPTION:**

This paper proposes a visual based model to predict physical characteristics from the pictures of a group of customers that were taken from a

smart fashion system (SFS) at a clothing retail store. This model incorporates image segmentation, object recognition and linear regression to build a prediction model. The physical characteristics that we are interested in includes people's height, weight, BMI, skin color, shoulder length, face widths at eyes level and mouth level and the distance between the eyes and chin. Eventually SFS will use these data to recommend to a customer the best suitable clothing options. An algorithm based on image processing techniques was developed to find some of these data. A linear regression model is used to predict other data which were not easy to find using the image processing techniques due to the poor illuminations in the pictures. The experiments have proved the proposed model is simple but efficient.

**1.3 TITLE:** A study of the Intelligent Material towards Fashion Innovation

**AUTHOR:** Wang Wen

**DESCRIPTION:**

This paper introduced the mainly application of intelligent materials in fashion and clothing, summarized three operating types of intelligent materials: passive intelligent materials, active intelligent materials and advanced intelligent materials. Including temperature control material of clothing, shape memory material, photosensitive, thermal, humidity and pressure sensitive and other color changing materials. Meanwhile, four directions towards the future development of intelligent clothing are summarized, including high performance, high precision, information and data security as well as commercial popularity.

**1.4 TITLE:** Smart power grids- A perfect solution, or just a fashion

**AUTHOR:** A. Wiszniewski; J. Szafran; B. Brusilowicz

**DESCRIPTION:**

The increase of the electric power demand is at the level 2–3% per year, and in some regions of the world may become much higher. In the same time the infrastructure of power systems develops much slower. The smart grid technology is to use modern telecommunication and informatics to bridge the gap. The aim is to integrate generation, transmission, distribution and consumption of the electrical energy to supply the power in reliable, safe, economic way with consideration of the environmental requirements.

The technology consists of four main parts:

- ➢ Management of demand
- ➢ Operational control of generation, transmission and distribution
- ➢ Protective devices of the new generation (adaptive and wide area)
- ➢ Self-healing and fast restitutions after system breakdowns.

**1.5 TITLE:** A coordination model for wearable fashion

**AUTHOR: A. Wakita; M. Tanji; S. Kitada**

**DESCRIPTION:**

Recently, the wearable computing technologies keep empowering a variety of fashion items. Each wearable fashion item is attractive and providing quite new possibilities in terms of new computing devices.

However, the conceptual model that supports fashionable coordination among those items is not proposed yet. To address this problem, we present a coordination model for wearable fashion by utilizing the conceptual model of analog synthesizers. We show some behaviour styles and these description method with schematic block diagram. A set of prototyping clothing based on the model is also presented for estimations.

# TABLE OF ARTICLES

| S.NO | YEAR | RESEARCHER | TITLE | DRAWBACKS |
|------|------|------------|-------|-----------|
| 1. | 2019 | Sang-Young-Jo; Sun-Hye Jang; Hee-Eun Cho; Jin-Woo Jeong | Scenery-Based Fashion Recommendation with Cross-Domain Generative Adversarial Networks | The approaches above commonly focus on understanding the visual features of the user's fashion taste |
| 2. | 2015 | Sophie Xiaofan Liu; Bingju Guo; Xiang Fang; Joshua C. Williams | Visual Based Prediction of Physical Characteristics for a Smart Fashion System | Visual based model to predict physical characteristics from the pictures of a group of customers that were taken from a Smart Fashion System (SFS) at a clothing retail store |
| 3. | 2021 | Wang Wen | A study of the Intelligent Material towards Fashion Innovation | It is mainly use for creating the intelligent of New Fashion recommended Systems |
| 4. | 2012 | A.Wiszniewski; J.Szafran; B.Brusilowicz | Smart power grids- A perfect solution, or just a fashion | In the same time the infrastructure of power systems develops much slower. |
| 5. | 2005 | A. Wakita; M. Tanji; S. Kitada | A coordination model for wearable fashion | To address this problem, we present a coordination model for wearable fashion by utilizing the conceptual model of analog synthesizers. |

# REFERENCES

1. Sang-Young Jo, Sun-Hye Jang, Hee-Eun Cho and Jin-Woo Jeong,"Scenery-Based Fashion Recommendation with Cross-Domain Geneartive Adverserial Networks," *2019 IEEE International Conference on Big Data and Smart Computing(BigComp)*, 2019, pp. 1-4, doi: 10.1109/BIGCOMP.2019.8679117.

2. S. X. Liu, B. Guo, X. Fang and J. C. Williams, "Visual Based Prediction of Physical Characteristics for a Smart Fashion System," 2015 IEEE International Conference on Smart City/SocialCom/SustainCom (SmartCity), 2015, pp. 886-889, doi: 10.1109/SmartCity.2015.182.

3. W. Wen, "A study of the Intelligent Material towards Fashion Innovation," 2021 2nd International Conference on Intelligent Design (ICID), 2021, pp. 436-439, doi: 10.1109/ICID54526.2021.00092.

4. A. Wiszniewski, J. Szafran and B. Brusilowicz, "Smart power grids — A perfect solution, or just a fashion," 11th IET International Conference on Developments in Power Systems Protection (DPSP 2012), 2012, pp. 1-4, doi: 10.1049/cp.2012.0066.

5. A. Wakita, M. Tanji, S. Kitada, M. Shibutani, H. Uchiyama and M. Inakage, "A coordination model for wearable fashion," Ninth IEEE International Symposium on Wearable Computers (ISWC'05), 2005, pp. 216-217, doi: 10.1109/ISWC.2005.2.