

Analysis of Gucci Runway Images Using an Artificial Intelligence Based Visual Search Tool: A Comparison of Fashion Styles by Creative Directors

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Introduction

In the field of fashion design, studies on seasonal styles have been conducted through subjective analysis methods by professionals' or researchers' insights focusing on fashion runway's design elements such as colors, materials, and details (Rhee & Park, 2017; Lee et al., 2015 etc.). However, conventional methods of analysis have limits to consistently evaluate since numerical standards are ambiguous for determining mixed fashion styles in runway images. Moreover, time and costs are required to analyze the massive amount of fashion styles presented every season. Therefore, at the current point of digital conversion, it is essential to apply recent deep-learning technology for a rapid and quantitative categorization of fashion styles. This study applies an artificial intelligence (A.I.) based visual search tool to analyze runway images. The purpose of this study is to explore the applicability of A.I. based visual search tools in the analysis of fashion styles. The study also selected Gucci collection runway images for analyzing fashion styles by creative directors.

Literature Review

Gucci Collection and Creative Directors

Fashion houses maintain a design's identity or at times make innovative changes. Notable examples include Gucci being appraised as a 'clearly segmented, businesslike collection' under Frida Giannini's direction from 2006 to 2015 (Friedman, 2014), and then recruiting Alessandro Michele as the new creative director in 2015 as Gucci needed a fresh fashion style for younger customers. Michele took a different approach, presenting fluidity and an unconstrained genderless collection by using flowers, butterflies, honeybees, dragons, and tigers as motifs on top of creating the leading fashion trends of 'mix-and-match of the Victorian and 1930 and everything' (Bruni, 2018).

Visual Search Tool

Visual search technology has rapidly developed since the application of deep-learning technologies to A.I. in 2010 and is capable of recognizing complex images as well as learning various images for different purposes (Kwon & Lee, 2011). In the field of fashion, visual search is mainly used for the process of categorizing design attributes, and Vittayakorn et al. (2015) applied visual searches to the analysis of street fashion images to categorize fashion styles with similar colors and types. Furthermore, online shopping companies such as EDITED and Mad Street Den applied visual search technology to implement a shopping service that recommends similar products based on categorized design attributes.

Methods

First of all, the learning process of visual search was carried out through cooperation with S company C&T fashion group in South Korea. The study categorized fashion styles through academic studies as well as current online references, and input 8,739 fashion images of representative style categories to develop a visual search model. Secondly, an empirical evaluation was conducted on the Gucci collection during the fashion style analysis process. A total of 193 runway images from Frida Giannini's 2014 FW and 2015 SS seasons and Alessandro Michele's 2015 FW and 2016 SS seasons were collected from Vogue.com, and the fashion styles were categorized and compared through the developed visual search model.

Findings & Discussion

First of all, results of categorizing and analyzing the fashion styles based on academic theories and fashion styles newly introduced on SNS were used, and based on the eight academic fashion styles, a total of 24 fashion style categories for A.I. were established that include Classic (classic, preppy, casual), Modern (modern, minimal), Mannish (mannish, androgynous, boyish, military, athleisure, normcore), Natural (natural, country), Ethnic (ethnic, tropical, oriental, hippie), Romantic (romantic, sexy), Elegant (elegant, sophisticated), and others (punk, hiphop, retro). Secondly, the results of analyzing runway images per season through a visual search tool showed that in 2014 FW; oriental (35.2%) and ethnic (12.2%), in 2015 SS; oriental (70.4%) and country (8.5%), in 2015 FW; romantic (23.7%), androgynous (17.7%), and oriental (14.2%), and in 2016 SS; oriental (40.7%) and ethnic (24.8%) showed the highest percentages. Through this process, main fashion styles continuously shown in Gucci collections (oriental, ethnic) and fashion styles that distinctively increase according to season (romantic, androgynous, country) were derived through quantitative values. Thirdly, as a result of comparing the differences between the fashion styles derived from each creative director, 2014 FW and 2015 SS collections directed by Frida Giannini showed 'modern', 'minimal', 'elegant', and 'sophisticated' fashion styles, while the

collections directed by Alessandro Michele showed ‘androgynous’, ‘hippie’, ‘romantic’, and ‘retro’ fashion styles. These results are a quantitative support to the design trends of each creative director which were discussed in An and Park (2017), Frida Giannini to be ‘a feminine collection that expresses soft charisma’ and Alessandro Michele to be ‘free, vintage, and genderless’ in fashion style.

Conclusions and Further Research

Through artificial intelligence based visual search tools, ambiguous and mixed fashion styles have been quantitatively identified. The results derived from this study can be utilized as an intuitive, quick, and useful guideline to the process of fashion design in the digital era. Furthermore, this study is expected to be utilized in the studies of predicting trends through the application of a time series analysis per season based on collection images that form fashion trends.

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