Jan 1st, 12:00 AM

The Rise of Fashion Informatics: Data-Mining-Based Social Network Analysis in Fashion

Li Zhao
University of Missouri, zhaol1@missouri.edu

Chao Min
Nanjing University, China, marlonmassine@yeah.net

Follow this and additional works at: https://lib.dr.iastate.edu/itaa_proceedings
Part of the Fashion Business Commons

Zhao, Li and Min, Chao, "The Rise of Fashion Informatics: Data-Mining-Based Social Network Analysis in Fashion" (2018).
International Textile and Apparel Association (ITAA) Annual Conference Proceedings. 5.
https://lib.dr.iastate.edu/itaa_proceedings/2018/presentations/5

This Oral is brought to you for free and open access by the Conferences and Symposia at Iowa State University Digital Repository. It has been accepted for inclusion in International Textile and Apparel Association (ITAA) Annual Conference Proceedings by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
The Rise of Fashion Informatics: Data-Mining-Based Social Network Analysis in Fashion

Li Zhao, University of Missouri. USA
Chao Min, Nanjing University, China

Keywords: Fashion Informatics, Data Mining, Network

Big data and advanced analytics are impacting the business dynamics of the fashion industry, yet current fashion researchers have not sufficiently taken advantage of large-scale datasets and data science (Lin, Zhou, & Xu, 2015). How to translate that creativity or intuition into a data-driven structure is a challenging problem for both fashion scholars and practitioners. With this in mind, a new interdisciplinary field is emerging called “fashion informatics,” which refers to the analysis of massive amounts of data by means of machine learning, social network analysis, and computer vision techniques targeted toward the fashion industry (Reiter, Zhao, & Ciampaglia, 2016). With the advent of modern cognitive computing technologies, fashion big data can be used in trend forecasting, influencer analysis, supply chain management, and personalized recommendations—that is, in almost every part of the fashion product cycle (Jain, Bruniaux, Zeng, & Bruniaux, 2017). Particularly, social media has become an important source for generating innumerable points of digitized and fresh data (Blazquez & Domenech, 2017). Fashion companies conduct various marketing campaigns, monitor customer feedback, and promote new collections on social media (Jain, Bruniaux, Zeng, & Bruniaux, 2017). Social media makes the full excitement and energy of fashion week and runway events directly accessible to fashion consumers in a globally impactful way (Bravo, 2016). Therefore, it is important for fashion brands to develop effective social-media strategies to reach their target consumers, and to exploit the informative value of the comments posted online by fashion consumers.

In this study, we applied data-mining-based social network analysis to demonstrate data structure and information flow during the Paris Fashion Week in order to understand the dynamic fashion world on social media. To the best of our knowledge, we are among the first to empirically investigate and visualize fashion network social media data mining. A social network is composed of a set of socially relevant nodes (actors, values, sentiments, ideas, locations, attributes) and the relationships (links, ties, associations, affiliations, interactions, evaluations) between those entities (Cioffi-Revilla, 2014). In the case of fashion, these nodes are most commonly brands, designers, trend-forecasting organizations, consumers, and key words. Drawing from a paradigmatic perspective of emergent social structures and the branch of mathematics called graph theory, social network analysis (SNA) converted social networks into abstract models of points and lines (Hanneman & Riddle, 2005). That is, individuals and other social actors (nodes) are represented by the points, and their social relations (edges) are represented by the lines (Hanneman & Riddle, 2005).

One case study related to the 2017 Paris Haute Couture Fashion Week (July 2nd to July 6th) was investigated in this research to demonstrate how data-mining-based SNA can help to understand fashion industry practices. Fashion Week is considered the most prominent and exclusive fashion event that sets new trends and gives the world a peek at the latest in high-end developments.
couture (Bravo, 2016). Twitter was chosen as the social media platform for this study. Twitter is particularly well suited as a source of real-time event content. Hashtag #pfw (Paris Fashion Week) was selected. To identify topics and quantify the frequency and other aspects of the online discussion among Twitter users over time, we created a series of networks of hashtags connected through user tweets. In these networks, nodes are hashtags created by users when they publish tweets on certain events. Through the Twitter Application Programming Interface (API), tweets containing the three chosen hashtags were crawled one week before (6/25-7/1), during (7/2-7/6), and one week after (7/7-7/13) Paris Fashion Week to monitor the mobilization of topics related to this event. We then extracted all hashtags, which are naturally good representations of topics being discussed, from the tweets data. These became the initial nodes for the networks. In addition, noise was also carefully reviewed and removed.

The pfw hashtag (Paris Fashion Week) was analyzed to show how the focus of social media users was mobilized along with the Fashion Week timeline. From Paris Menswear Week to Paris Haute Couture Week, to Milan, London, and New York Fashion weeks, social media users were actively engaged and paid close attention to topics related to Fashion Week. Notably, San Francisco and Los Angeles emerged as potential fashion capitals due to the influence of high-profile celebrities and high-tech companies in California. The case of #pfw that haute couture and luxury were associated with the country of origin’s culture and were mainly a European phenomenon. The findings suggest that fashion companies may consider tagging high-profile celebrities to increase the number of consumers viewing and engaging with posts and contents on social media. Also, while preserving the traditions of haute couture, such as craftsmanship and heritage, incorporating high technologies into today’s fashion design could catch the attention of modern consumers.

This study is one of few studies to provide an in-depth discussion and demonstration of big data implementation in fashion through data-mining-based social network analysis. As a novel approach in fashion, type of analysis is useful in detecting and predicting fashion events and trends. Visualized social networks may reduce complexity and enable researchers to easily point out key participants and clusters within the networks. Using data mining techniques, social network analysis can be used by fashion brands to identify a small number of key members of a network to promote new campaigns and adopt new products. Through key influencers in the network, fashion companies could maximize the number of social media users seeing and engaging with posts. Fashion brands could also identify important nodes in a network to discover how communities are connected to strategically engage fashion consumers.


