

Using OpenAI to Forecast Fashion Trends and Design Development

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The purpose of this study is to analyze fashion design trends using ChatGPT and DALL-E 2, which have recently emerged, and to explore ways to utilize open artificial intelligence for fashion design development and fashion design. To this end, we used ChatGPT-3.5 and ChatGPT-4, which have data up to 2021, were used for natural language processing analysis to predict women's fashion trends for F/W 2023, and the results were compared with data from FirstView Korea, a representative trend company in Korea, to evaluate their accuracy. The results showed that women's fashion trends for F/W 2023 often emphasize basic materials to create a vintage look or emphasize the quality of materials, which ChatGPT was unable to predict. On the other hand, DALL-E 2 generated generally good fashion design results, and the more specific the user describes the desired design to the prompt, the higher the quality of the desired results.

Keywords: OpenAI, ChatGPT, DALL-E 2, fashion trends, fashion design

Introduction

Current industries are actively utilizing artificial intelligence(AI) technology. Fashion is no exception. AI technology not only helps with product planning by generating fashion design tasks, but also provides curation capabilities by analyzing consumers based on algorithms to present similar products and make personalized style recommendations. ChatGPT and DALL-E 2, announced in November 2022 by AI company OpenAI, have many potential uses in fashion. ChatGPT is a sibling model of InstructGPT trained to follow prompts and provide detailed answers, while DALL-E 2 is a deep learning model developed by OpenAI to generate digital images from natural language descriptions (Baidoo-Anu, & Owusu Ansah, 2023). Since the collaboration of AI with the complex and creative field of fashion design improves work efficiency (Lee, 2022), it is worth considering the utilization of ChatGPT and DALL-E 2 in the field of fashion design. Therefore, this study analyzes the fashion design trends of F/W 2023 using ChatGPT and DALL-E 2, which have recently emerged, and develops a fashion design to explore how to use open AI in the field of fashion design in the future.

Literature Review

Open AI and fashion

With the massive adoption of artificial intelligence(AI) and deep learning technologies, the fashion industry is at a tipping point. AI is now responsible for overseeing the supply chain, manufacturing, delivery, marketing, and targeted advertising of apparel and wearables, and may soon replace designers. Fashion design with AI and designing apparel for purely digital environments such as metaverses, various games, and other online-specific activities are emerging as niches with significant market growth potential (Simian & Husac, 2023).The availability of openAI will create a new wave in the fashion industry and pave the way for even more rapid expansion of the use of

NLP(Natural Language Processing) and GANs(Generative Adversarial Networks) in fashion

Human and AI hybrid solution in creative fashion area

Collaborative design between humans and artificial intelligence is expected to provide sustainable solutions in the fashion industry, such as increasing productivity and reducing unnecessary energy consumption in fashion products, including environmental issues caused by inventory handling and overproduction. Lee(2022) developed a fashion textile design utilizing traditional Korean patterns with a GAN. Through the process of comparing the designs of human designers and GANs, Lee (2022) suggested that the utilization of GANs in the creative design domain will change the environment for human designers to focus on more demanding creative tasks, freeing them from simple repetitive tasks.

Methodology

In this study, the results of natural processing analysis using ChatGPT and image analysis using DALL·E 2 were derived to evaluate the accuracy and completeness of the results. First, for the natural language processing analysis, we used ChatGPT-3.5 and ChatGPT-4, which have data up to 2021, to predict 2023 F/W women's fashion trends, and compared the results with data from firstVIEWkorea, a representative trend company in Korea, to evaluate the accuracy. A total of four questions related to fashion trends were used in ChatGPT-3.5 and ChatGPT-4; Please predict '2023 F/W women's fashion trends.', 'Can you explain it again focusing on the silhouette?', 'Can you explain it again focusing on the color?', 'Can you explain it again focusing on the material?'. And We tried to develop fashion with DALL·E 2. We obtained fashion design

results from DALLE 2 by inserting various keywords as prompts. The keywords include 2023 F/W women's fashion trends predicted through ChatGPT that match the actual trends.

Results and Discussion

When asked about "F/W 2023 women's fashion trends," ChatGPT responded holistically, covering all aspects of megatrends and fashion design, including silhouettes, colors, and materials. When asked to break the question down into silhouettes, colors, and materials, ChatGPT was able to answer each question and provide more detailed trend answers. For silhouettes, we didn't stray too far from the actual F/W 2023 womenswear trends, including oversized styles, high-waisted styles, and structured tailoring, but we did predict that A-line skirts would take over, which was a departure from the actual trend of pencil skirts. Colors were dominated by earthy and neutral tones, but too many colors were mentioned to be considered a trend. In terms of materials, we suggested warm, luxurious materials, and furthermore, styling that contrasted traditional F/W materials with non-traditional ones. These were principled answers that took into account long-standing social trends and the seasonality of fall and winter, and we were unable to make specific predictions about new trends.

In the development of fashion designs through generative image generation, genders were not correctly categorized as male, female, etc. Most of the generated images did not adequately represent at least one of the model's body, textile product, or background, with the face having the least detail. For clothing designs, the representation of materials was generally good, but the creativity of the design itself was not evident, especially the abstraction and implementation of different clothing items.

Conclusion

In this study, ChatGPT predicted the relatively near future, i.e., 2023, which is not far away from the synchronized year 2021, so we were able to derive results that did not deviate much from the actual trend. However, in the actual 2023 F/W women's wear trend, even basic materials were often made to look vintage by giving an additional touch or focused on the quality of the material, which was not predicted by ChatGPT. Therefore, it is necessary to study the use of ChatGPT from a fashion design perspective in the future, considering a longer future and more diverse prompts, and discuss specific applications accordingly. DALL-E 2 has produced generally good fashion design work results. And when the user described the desired design more specifically in the prompts, the desired results were more complete. However, it didn't quite understand a kind of abstract expression, and it was verified that the learning of clothing

types has not been done properly to date. Also, there are limitations in developing creative designs at this time since images are generated based on text. Therefore, it is necessary to conduct in-depth research on the use of ChatGPT and DALL-E 2 from a fashion design perspective in the future and discuss specific applications.

References

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