DREU FINAL REPORT

Over the course of the summer, a number of things have changed about our research project. Originally, we aimed to create and study a personalized fashion search engine. While personalization is still important, we decided to improve another aspect of the online shopping experience instead— by providing AI justifications to explain fashion recommendations.

Current online shopping experiences are very similar to one another. Many fashion retail sites—such as Nordstrom and Amazon—have a side panel with numerous filters to narrow the results displayed. However, this interface can lead to choice paralysis among consumers. A single query often returns thousands of products, and navigating such a space can be overwhelming and time consuming.

Our goal was to improve the user experience, especially for individuals who many be unfamiliar with fashion or their personal style. To do this, we created and studied a feature called "justifications," which are short, AI-generated explanations as to why a certain product fits with a user's query. For example, if a user searches for "summer dress," the justification would highlight a product's "nautical pattern" or "linen fabric" that would make it a perfect choice. We predicted that these justifications would help a user to make more informed choices, as well as help them discover their own style through exposure to fashion vocabulary. In addition, we questioned whether including these justifications would affect the users' perception of the model's intellegence.

To implement the justifications, we built our own search engine and web application with Elasticsearch. We trained our model with Keras, implemeneted the back-end with Flask, and the front-end with React. Building the search engine enabled us to have a powerful tool to test our hypothesis, and we could tweak the web application when needed. The search engine was completed by the end of the summer program.

We originally aimed to complete a user study as well. The study would ask participants to interact with two versions of the search engine: one with justifications and one without. Users would be asked to perform search queries on both, in a random order, and asked to evaluate the results and justifications through a questionnare. We would also track mouse movement activity on the site to aid our understanding of how users interacted with the interface. Due to time constraints, this study will be completed after the summer research program.

With a complete search engine and feedback from the initial user study, we are well equipped to begin exploring our questions, as well as generating new ones. What is the most effective way to present

these justifications on the front-end? Can our model learn how to return better results or justifications over time? How can we ultimately use AI to construct a better user experience? The future of this project is undoubtedly exciting.