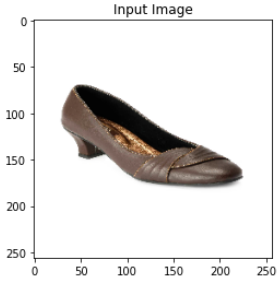
We worked on another recommendation system, one level above the VGG16 modeled recommendation system worked on last week. The notebook containing this model, like last week's, was prepared by someone else and gave us some ideas. [1] Recommendation systems are particularly useful when an individual needs to select an item from the potentially large number of items that a service can offer. A few of the recommendation systems can be classified as Collaborative Filtering, Content Based Filtering and Hybrid recommendation systems. This notebook has demonstrated Content Based filtering which is based on a description of an item and a profile of the user's preferred options. In a content-based recommender system, features are used to describe items, plus a user profile is created to indicate the type of item that this user likes. In other words, the algorithms try to recommend items that are similar to items that the user has liked in the past.

In addition to the model we worked on the previous week, this week's notebook has more generalizable and higher level operations instead of a basic level metric like cosine similarity that allows us to recommend products.

A vector with 512 features is output from the VGG16 network, and if there are "n" data in the dataset, this n x 512 matrix will be obtained. Despite the resource utilization of the high dimensional matrix, PCA was used as a dimensionality reduction method. The purpose here is to reduce the resource consumption of the k-nearest neighbor (KNN) algorithm, which will be used in the next process, the classification of features.

With the KNN algorithm, the 5 most similar products will be presented based on the raw features extracted from the pre-trained network. The reason for listing 5 products is that k = 6 and the first image is used as the query image. In other words, it can be considered as 5 products similar to the first picture.

Assuming that a product is received, the suggested 5 products that are similar to it are as follows:



References

[1] Kaggle Source: https://www.kaggle.com/code/quadeer15sh/visually-similar-product-recommendation

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