**Summary on Recommendation System**

1. **Data Wrangling**

Skipped. The same as for classification

**2. Data Processing**

Skiped. The same as for classification, except there is no need to pre-process the target feature, as building recommendation system is an unsupervised machine learning.

**3. Modeling**

Similar to the classification modeling, I start with a pre-trained VGG16 model, but for feature extraction this time. Basically by doing this I am summarizing information of each image contained in 224×224×3 pixels into 1,000 newly formed feature. Next on the 1,000 extracted features, I caculate the pair-wise cosine similarity matrix among the 4,329 images. I then use the similarity scores for recommendations. For example, to find the top 5 recommendations for a given product/image, the 4,328 similarity scores of the product with other products/images are ranked in a descending order. The 5 product/images with the highest 5 similarity scores will be recommended.

1. **What’s Next**