BURBERRY
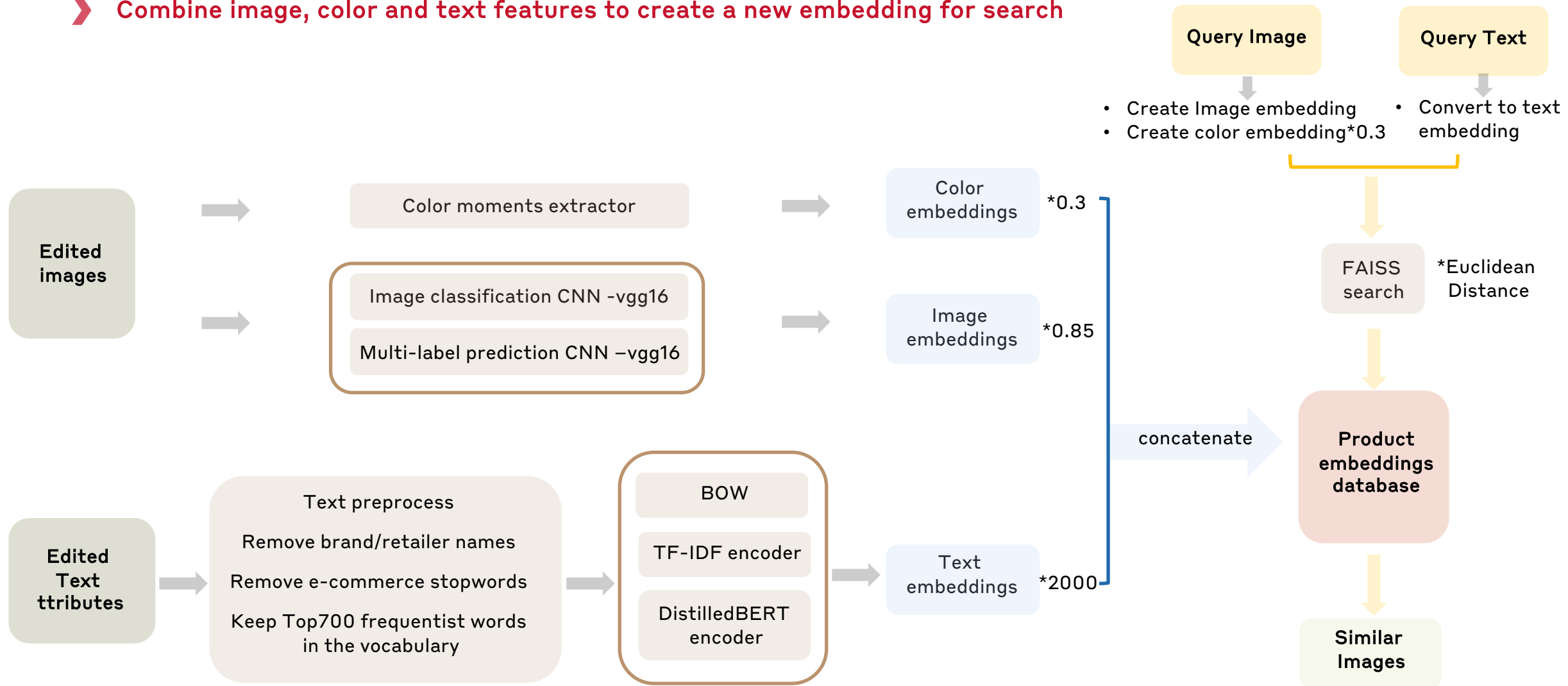
LONDON ENGLAND

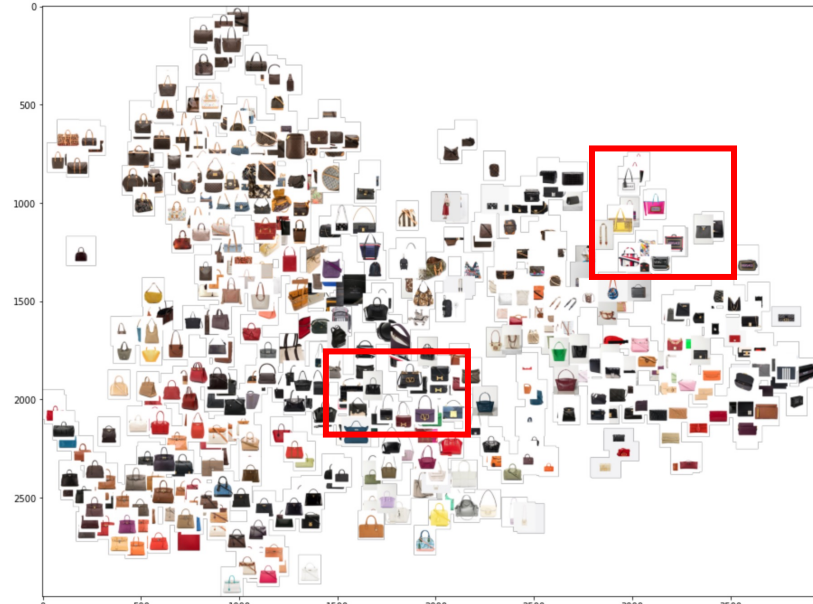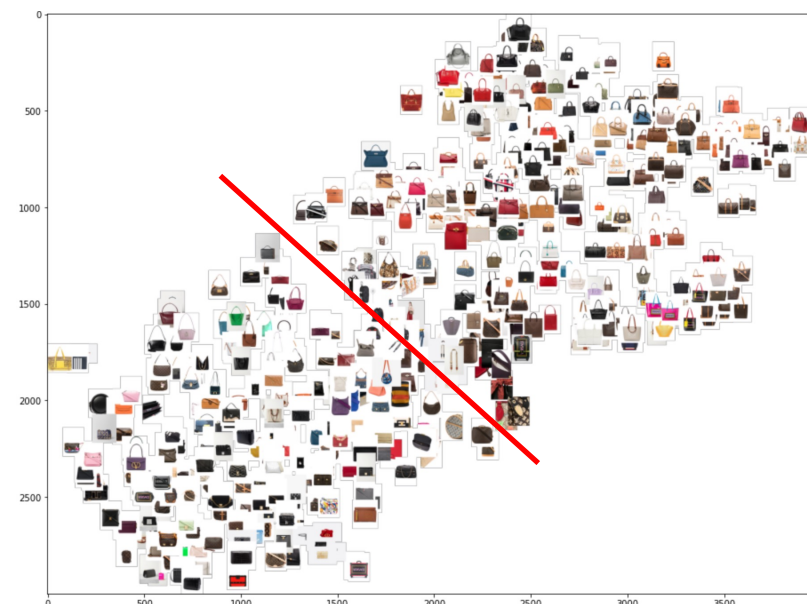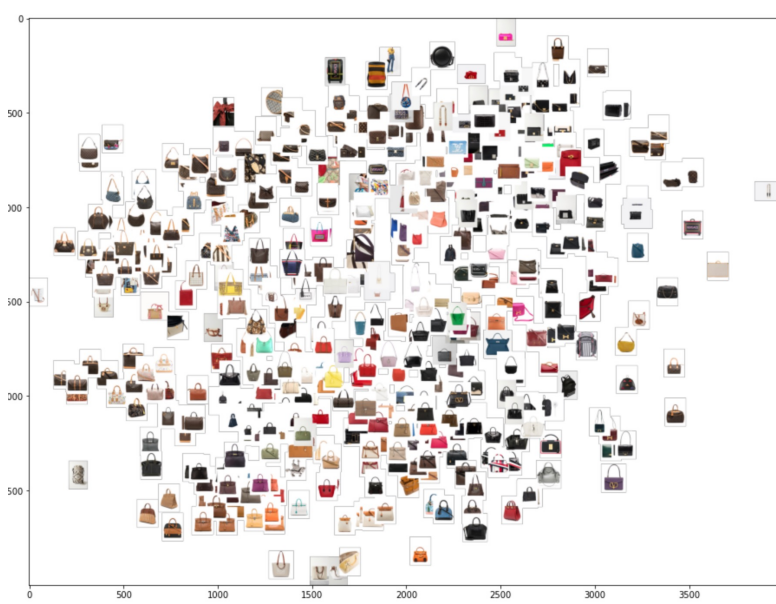# 1. IMAGE RETRIEVAL USING MUTI-MODAL EMBEDDINGS

> **Combine image, color and text features to create a new embedding for search**

Query Image

Query Text

- Create Image embedding
- Create color embedding*0.3

- Convert to text embedding

Edited images

Color moments extractor → Color embeddings *0.3

Image classification CNN -vgg16
Multi-label prediction CNN –vgg16 → Image embeddings *0.85

Edited Text ttributes

Text preprocess
Remove brand/retailer names
Remove e-commerce stopwords
Keep Top700 frequentist words in the vocabulary

BOW
TF-IDF encoder
DistilledBERT encoder → Text embeddings *2000

concatenate

FAISS search *Euclidean Distance

Product embeddings database

Similar Images

2. T-SNE RESULTS DEMONSTRATION

> t-SNE of 1,000 images sampled from the EDITED bag datasets

3. RAW IMAGE EMBEDDINGS FROM VGG16

> **Products with the same bag shape are grouped together**

- **Image embeddings are obtained from the last layer of the convolutional layers of a pre-trained VGG16 network.**

- Dimension: (1,512)

- Dimension after PCA: (1,300)

- Variations of the same product is placed together.

3. EMBEDDINGS FROM TRAINED NETWORK A

Clear separation between bags with top handles and bags without

- **Image embeddings are from the penultimate layer of a VGG16 network that was trained with the Burberry bag dataset on the bag category classification task.**

- Dimension: (1,256)

- Dimension after PCA: (1,256)

- Retrieved results will contain less or no products from another category.

- Products that are displayed in a way that the model is not familiar with will be placed far away from its similar products.

3. EMBEDDINGS FROM TRAINED NETWORK B

> **Products with similar style seems to be grouped together**

- **Image embeddings are from the penultimate layer of a vgg16 network that was trained with a sample of EDITED bag dataset on a multi-label classification task using keywords extracted from the text attributes**

- Dimension: (1,499)

- Dimension after PCA: (1,300)

- Products in similar style but are distinct in shape are grouped closer.