Image similarity search using deep learning

This project demonstrates, how we can make use of deep learning to do state-of-the-art image similarity search. I have used tensorflow and some publicly available datasets.

Results

Environment

compiler: python 3.11

packages: Flask PyQt5 numpy tensorflow Flask-HTTPAuth scipy imageio matplotlib sklearn

editor: Visual Studio Code

programming language: html(css, javascript), python

How to run

1. Download imagenet folder, extraxt and keep it in server directory
2. Download datasets for footwares, apparels keep them inside a directory under upload folder. Final folder strcture will be as below

```
├─.idea
|  └─inspectionProfiles
├─.vscode
├─assets
└─server
    ├─database
    |  ├─dataset
    |  └─tags
    ├─imagenet
    ├─images
    ├─static
    |  ├─images
    |  └─result
    ├─templates
    ├─uploads
    └─__pycache__
```

3. Run image vectorizer which passes each data through an inception-v3 model and collects the bottleneck layer vectors and stores in disc. Edit dataset paths accordingly indide the image_vectorizer.py

```
python server/image_vectorizer.py
```

This will generate two files namely, image_list.pickle and saved_features.txt. Keep them inside lib folder where search.py script is available.

4. Start the server by running rest-server.py. This project uses flask based REST implementation for UI

```
python server/rest-server.py
```

5. Once the server starts up, access the url 127.0.0.1:5000 to get the UI. Now upload any file and see 9 similar images. You can change the value of K from 9 to any values, but dont foreget to update the html file accordingly for displaying.