Assignment #4

Deep Fashion

Category and Attribute Prediction

Due on Dec 1st, 11:59 pm

Overview: Transfer Learning and MLT

- As discussed in lecture, transfer learning plays an essential role in many vision tasks.
- Multitask Learning (MLT) is an approach to inductive transfer that improves generalization by using the domain information contained in the training signals of related tasks as an inductive bias.
- It does this by learning tasks in parallel while using a shared representation; what is learned for each task can help other tasks be learned better.
- In this assignment, you will gain experience in transfer learning and MLT. You are to implement a multi-task model to predict the category and attributes of a fashion item.

Deep Fashion Dataset

- DeepFashion是香港中文大學開放的服裝資料集。
- 資料中有超過80萬張的圖片，包含不同角度、不同場景等。
- 每張圖片含有豐富的標籤：
  1. 屬於50個類別中的哪類
  2. 擁有1000個屬性中的哪些屬性
  3. 邊框資訊
  4. 特徵點資訊

Category : 0 (Dress)
Attribute : floral, maxi

- 本作業從原始資料中限縮了 10 個種類，隨機選出 55845 張
- 並挑出 1000 種屬性中的 15 種來組成資料，最終提供切分完畢的資料

Your task

- Using a pre-trained model of your choice, you are to build a deep network that predicts the category and attributes of an item simultaneously.
- 輸出可分為兩個部分
  - Category (multi-class classification):
    每張圖片是10個種類中的哪一種(0~9)
  - Attribute (multi-label classification):
    每張圖片有15個屬性中的哪幾個(可以有超過一種)
- 須考量 activation 和 loss function 的選擇

- 請注意：不要對兩個部分分別建立模型！

Things you cannot do

- You cannot submit results predicted by others.
- You cannot copy trained models from others.
- You cannot copy code from others, internet, github …
- You cannot collect more images to train your model in order to boost performance.
- You cannot train two model respectively (for category and attribute)

Any violation will result in 0 scores!

Submission

- Submit your predictions on the test images to Kaggle for evaluation.
- Category
  https://www.kaggle.com/t/198dda90183d4333b56e8869ff3d7b07
- Attribute
  https://www.kaggle.com/t/a2f835b64dd74241a9d91aa538a8f336
- Remember to change your **Team Name**

- Submit your code to the CU.
- File name: assignment_4.ipynb

Evaluation

- Category
  - Evaluation: Accuracy
  - Submission format:

```
file_path,category_label
deep_fashion/test/00001.jpg,1
deep_fashion/test/00002.jpg,2
etc.
...
```

- Attribute
  - Evaluation: Mean F1-Score
  - Submission format:

```
file_path,attribute_label
deep_fashion/test/00001.jpg,3 10 11
deep_fashion/test/00002.jpg,2 8
deep_fashion/test/00003.jpg,0 10
etc.
...
```