AAA534-2020S: Final Project Proposal
"Fashion Instance Segmentation Challenge"

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Abstract

In this project, we will study about *fashion instance segmentation*. Unlike normal *instance segmentation*, this task requires more sensitive and compact segmentation performance even for small and overlapped apparels. The dataset can get achieved from *iMaterialist (Fashion) 2020 at FGVC7* in the kaggle.

1. Introduction

Since the pandemic by COVID-19 broke out in the world, many countries have campaigned social distancing, and the public who got the virus have been being required to be quarantined in their house or medical facilities. Meanwhile, in the aspect of markets, an interest in *untact lifestyle* is more increasing as a new business model.

Among a lot of untact business domains, one of the anticipated markets whose demand will increase with high probability is fashion. Therefore, as a part of developing algorithms to meet the changing market and consumer needs, we got interested in *fashion instance segmentation*, of which dataset is opened by the annual competition of CVPR.

The other advantage by doing this task is that we can get human data. Despite of installing renewal constitutional law related to using public data, it's still sensitive issue to assemble human data because of privacy. Even after this project, it is possible to use this human data for another.

The given task requirement is to assign segmentations and attribute labels onto fashion items;-hats, cloths, glasses, and etc.- worn by models. In this case, we should detect only fashion instances and segment each item, so *instance segmentation* paradigm can be considered.

The prime difference with normal *instance segmentaion*, however, is that *fashion instance segmentation* requires sensitive mask generation. For example, where to attach pockets on pants or how much showing handkerchief on jackets looks good are important information in the fashion area. Unfortunately, these items are normally small and look just unified one with main clothes. Furthermore, it can be distorted or variant according to the pose of fashion models. Therefore, it is a challenge to develop an algorithm generating more compact and delicate masks.

2. Dataset

You can check the data from the link below:

`iMaterialist (Fashion) 2020 at FGVC7`

This dataset consists of 45,623 and 3,200 items for train and test in each (refer to the link for detail description).

3. Current status

The latest best proposal is based on Mask R-CNN, which being pretrained with the MS COCO dataset.

4. Goals to achieve throughout this project

In this study, we will focus on how to improve the performance with segmenting clothes, and then classify the apparels.

5. Brief/tentative schedule

5/17 for proposal. 5/24 for building a pipeline with template study. 5/31 for applying a state-of-art instance segmentation method. 6/07 for experiments and results.

6. Roles

- **Data handling**: together
- **Model Analysis** : together
- **Train and Evaluate** : together
- **Report** : together

7. Comparison with SOTA and baseline

Path Aggregation Network for Instance Segmentation, CVPR 2018, Mask Scoring R-CNN, CVPR 2019, and iMaterialist 2020: Starter EDA + Mask RCNN are considered.