

BJIT Ltd

# Weekly Report

## Fashion Recommender System

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## Project Goal

The goal of this project is to develop a **Fashion Recommender System** that recommends fashion items that are similar to given or selected one. This system will function calculating image similarity ranking.

A customer may upload an image of a fashion item or the image might be selected from an image database, then the recommender system will calculate the similarity ranking and predict some similar fashion items based on similarity ranking.

The image dataset will have metadata for the images. This metadata includes the information of gender, age category(men/women/girls/boys), item category, season, year etc of a certain fashion item. We will include these metadata of a fashion item image to filter age, gender, season etc based fashion that are complex(Not possible) to get from image alone. It will help us to avoid age and gender related major issues(mistakes) to make the system more accurate.

We will use(train) ImageNet based Keras pre-trained models(ResNet, Xception, Inception, NASNetLarge) to classify fashion items preliminary. It will help reducing computational complexity.

Then we will use a Deep learning CNN model to extract features of primarily selected fashion item images. Here we will apply cosine similarity on extracted features to get image similarity ranking and will use a triplet of images to get image similarity. There will be the given image, the positive(most similar) image and the negative(most dissimilar) image, from these three images our model will find the most similar images for recommendation.

We may also use NLP to get the current Fashion trends from Social media like twitter and apply them for more accurate, specific, trendy and personalized recommendations. We may deploy humans(Stylists) to do it.

## Goal of This Week

1. Study and explore ImageNet based models(VGG, ResNet, Xception, Inception)
2. Transfer learning on these models to classify fashion item images.
3. Apply cosine similarity on extracted features of images to calculate similarity.
4. Analyze model performances and data to decide/ redefine the business goal.
5. Analyze gained knowledge and data to meet the business goal the most.

## Accomplishments

- Explored different models and transfer learning on them, recorded their performance on our dataset.
  - [Model exploration-v2](#)
  - [Implemented initial version of recommendation system](#)

### Task-Time Table

Engineer	Task	Duration(hrs)	Total(hrs)
Shohag Mia	Explored ResNet50 more for image classification with different parameters like different classes, learning rate, batch size	16	32
	Implemented initial version (V01) of Fashion Recommender System	16	
Muttakin	Feature extraction of images to apply cosine similarity	16	32
	Transfer learning implementation and training on MobileNet keras model.	16	
Safa	Transfer learning implementation with Xception on subCategory and mainCategory feature	8	16
	Feature extraction of images to apply cosine similarity with Xception and inception.	8	

## Plans for Next Week

1. Prepare proper and sufficient dataset to train pre-trained keras models to get optimum accuracy.
2. Using these prepared data, train Keras models(ResNet, Xception, NASNetLarge)
3. Feature extraction from these models to apply Cosine similarity.
4. Analyze model performances and data to decide/ redefine the business goal.

## Project Status

### Green

#### Note -

- Green means project is on schedule and there are no major issues
- Yellow means the project is somewhat delayed and/or there may be some major risks at the current point
- Red means the project is seriously at risk of being delayed and/or there are some major risks affecting the project

## Project Timeline(Business & Data understanding)



## Query

None

## Key Issues, Risks or Concerns

Item	Action/Resolution	Responsible	Completion Date
GPU requirement	Needs GPU to explore potential models	Javed Hasan	