Fashion product classification
&
Recommender system

- The data contained more then 22000 fashion product images
- Data was spited into training (17 k) and validation data set
- Validation data set was completed balanced.
- Two CNN model was trained to classify an product image into category and gender.
- Embedded layer output was taken to recommended similar products.

MODEL 1 : CLASSIFY INPUT INTO CATEGORY

```
Model: "sequential"
_____
 Layer (type)                Output Shape              Param #
=================================================================
 resnet50 (Functional)       (None, 2048)              23587712

 dense (Dense)               (None, 128)               262272

 batch_normalization (Batch  (None, 128)               512
 Normalization)

 dropout (Dropout)           (None, 128)               0

 dense_1 (Dense)             (None, 64)                8256

 batch_normalization_1 (Bat  (None, 64)                256
 chNormalization)

 dropout_1 (Dropout)         (None, 64)                0

 dense_2 (Dense)             (None, 32)                2080

 batch_normalization_2 (Bat  (None, 32)                128
 chNormalization)

 dropout_2 (Dropout)         (None, 32)                0

 dense_3 (Dense)             (None, 18)                594

=================================================================
Total params: 23861810 (91.03 MB)
Trainable params: 23808242 (90.82 MB)
Non-trainable params: 53568 (209.25 KB)
```

RASNET - 50 → **LAYER 1** → **LAYER 2** → **LAYER 3** → Category prediction

➢ This model is used to classify an product image category (t-shirt , shirt , salwar , watch , bag pack , wallet etc.)
➢ It was trained on more then 17000 product images.

➢ **ACCURACY : 92 %**

MODEL 2 :

CLASSIFY INPUT INTO GENDER

```
Model: "sequential_1"
_____
 Layer (type)                Output Shape              Param #
=================================================================
 resnet50 (Functional)       (None, 2048)              23587712

 dense_4 (Dense)             (None, 64)                131136

 batch_normalization_3 (Bat  (None, 64)                256
 chNormalization)

 dropout_3 (Dropout)         (None, 64)                0

 dense_5 (Dense)             (None, 32)                2080

 batch_normalization_4 (Bat  (None, 32)                128
 chNormalization)

 dropout_4 (Dropout)         (None, 32)                0

 dense_6 (Dense)             (None, 16)                528

 batch_normalization_5 (Bat  (None, 16)                64
 chNormalization)

 dropout_5 (Dropout)         (None, 16)                0

 dense_7 (Dense)             (None, 2)                 34

=================================================================
Total params: 23721938 (90.49 MB)
Trainable params: 23668594 (90.29 MB)
Non-trainable params: 53344 (208.38 KB)
_____
```

RASNET - 50 → **LAYER 1** → **LAYER 2** → **LAYER 3** → Category prediction
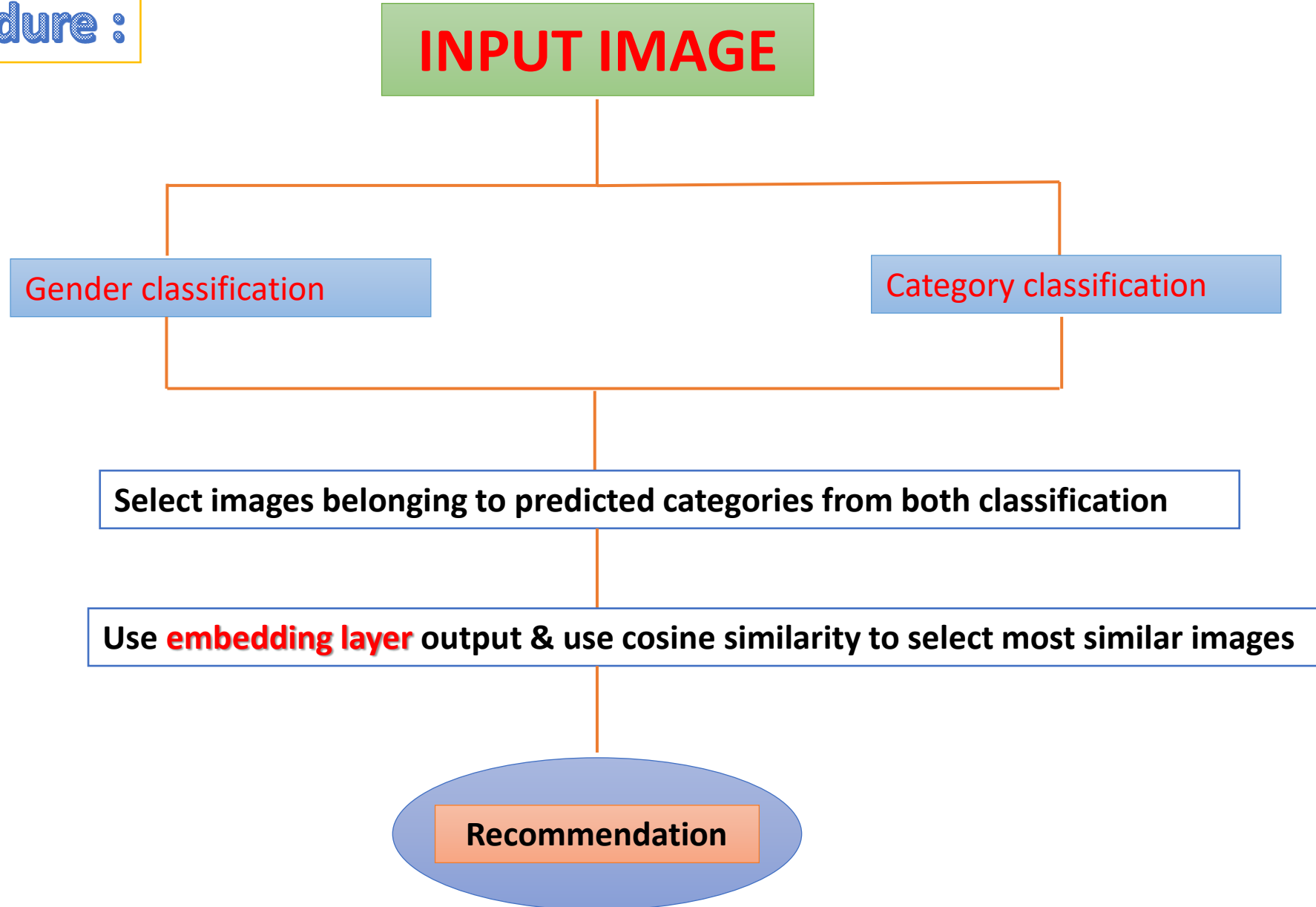
➢ This model is used to classify an product image gender (Male , Female)
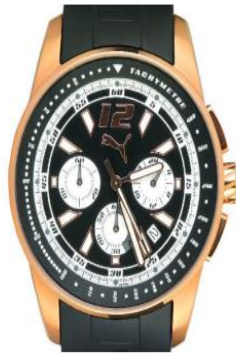➢ It was trained on more then 17000 product images.

➢ **ACCURACY : 93.13 %**

INPUT IMAGE

Gender classification

Category classification

Select images belonging to predicted categories from both classification

Use embedding layer output & use cosine similarity to select most similar images

Recommendation

Result :

INPUT

RECCOMEDATION

INPUT

RECCOMEDATION

INPUT

RECCOMEDATION

INPUT

RECCOMEDATION

INPUT

RECCOMEDATION

INPUT

RECCOMEDATION

INPUT

RECCOMEDATION