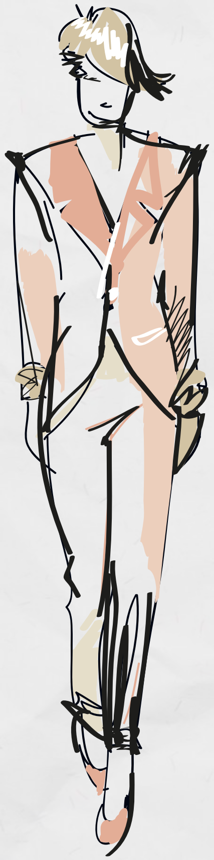
Bea*very Stylish

Manit Mehta, Heidi Hu, Nathan Jiang, Derek Jin

TA: Alina Chen :)



Overview

Getting up everyday to choose an outfit is HARD!

Let us do it for you!

How it works:

- We show you an image
- You rate it from 1-5
- Soon enough, you will stumble upon your fashion match!

Garment Classification Model

- Pre-trained model “deepfashion2-m-11k”

⇩

- Identifies garment & returns garment type

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- Use binary mask to crop garment out

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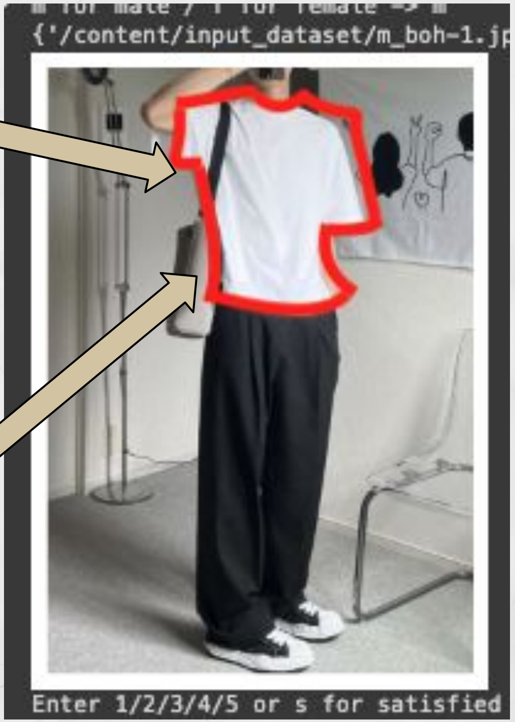
- Run “ColorThief” python library to find color of the garment

“Short sleeve top”

“White”



```
m for male / f for female => m
{'/content/input_dataset/m_boh-1.jp
Enter 1/2/3/4/5 or s for satisfied
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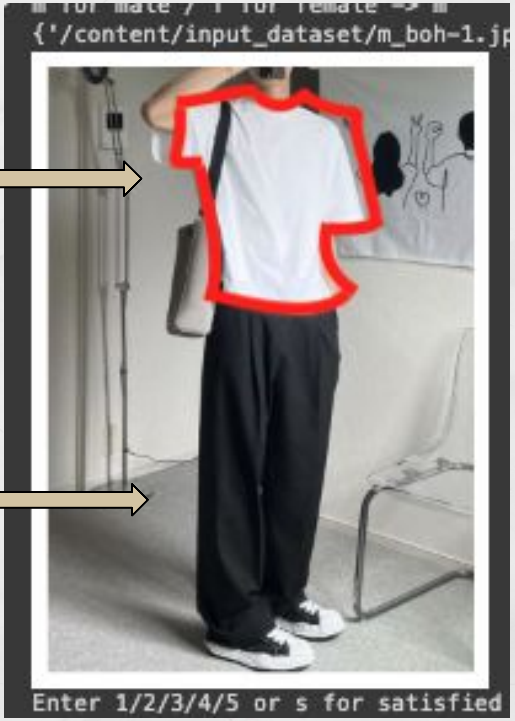
Garment Classification Model

Example entry inside dictionary:

{"/m_minimalist-3": [minimalist, short sleeve top, white, trouser, black]}



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Enter 1/2/3/4/5 or s for satisfied
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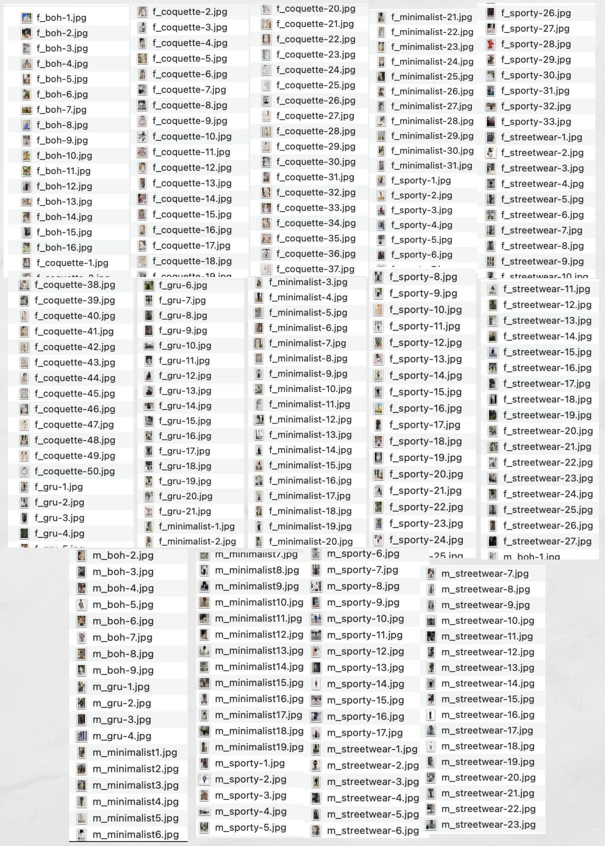
DATA

- Manually created our own dataset
- Chose 6 aesthetics, collected 50 images for each
  - Grunge, streetwear, boho, coquette, athleisure, minimalist
- Labeled each image with gender and aesthetic

DATA (cont.)

- Complications:
  - **Data cleaning:** Converted all files to .jpeg, strategically named files (m/f_aesthetic-#) and used f-strings in our code to quickly iterate and load in data
  - **Large dataset:** Find ways to transfer/upload data effectively and efficiently. Also address runtime - took around 15 min to process all data



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How it Works - Dictionaries

Image Dictionaries

- Database to store image information
- Two dictionaries - one for males, one for females
  - User input determines choice of dictionary
- Key: image file path, value: list of attributes (aesthetic, top/bottom garment, corresponding colors)

Features Dictionary

- Stores the attributes and their corresponding weights
- Allows weights to be adjusted through feedback

m_img_dict
- Image paths

f_img_dict
- Image paths

feat_dict
- Aesthetic: weight
- Type of top: weight
- Type of bottom: weight
- Color: weight

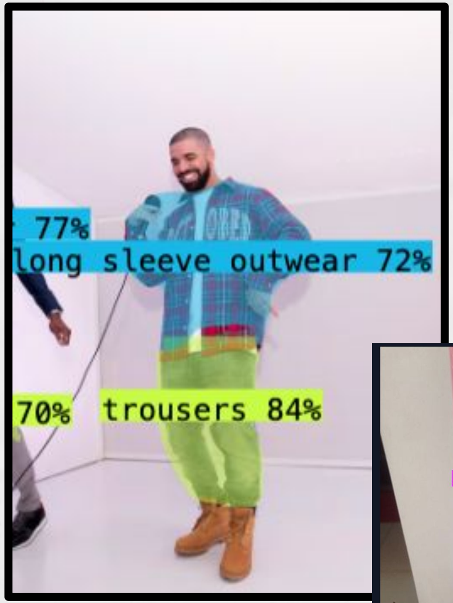
How it Works - Probabilities (Weights)

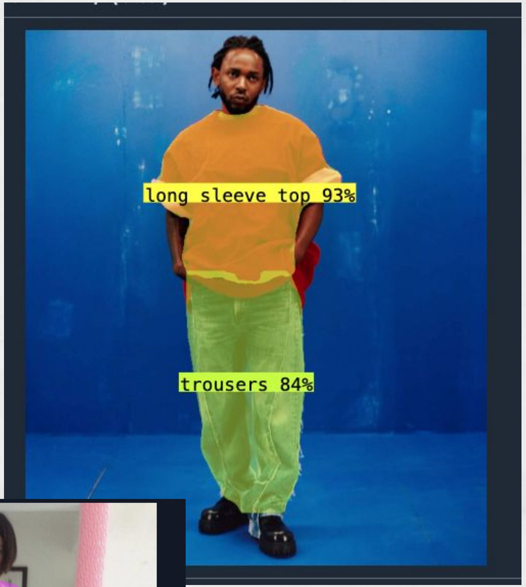
Probability dictionary

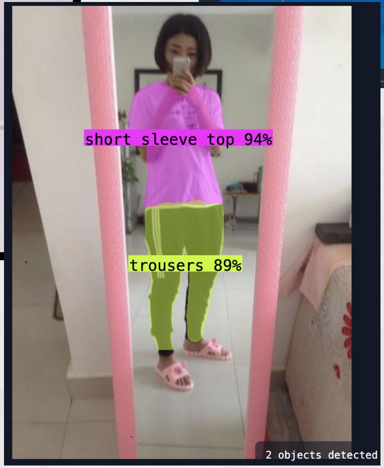
- Maps image path to a list of corresponding weights
- Helps choose the next image to recommend to the user

Attributes and Weights:

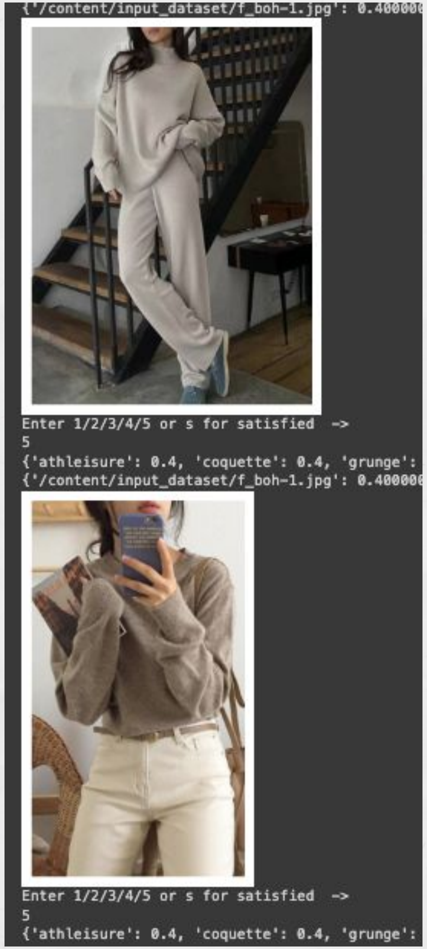
- **Aesthetic:** Grunge, streetwear, athleisure, etc.
- **Tops:** shirts, long sleeves, etc.
- **Bottoms:** trousers, skirts, etc.
- **Color:** Red, blue, black, etc.
- All equally weighted







Finding Next Image



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{'/content/input_dataset/f_boh-1.jpg': 0.40000
Enter 1/2/3/4/5 or s for satisfied  ->
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{'athleisure': 0.4, 'coquette': 0.4, 'grunge':
{'/content/input_dataset/f_boh-1.jpg': 0.40000
Enter 1/2/3/4/5 or s for satisfied  ->
5
{'athleisure': 0.4, 'coquette': 0.4, 'grunge':
```

1 – Display chosen image

2 – Have the user input a rating 1-5

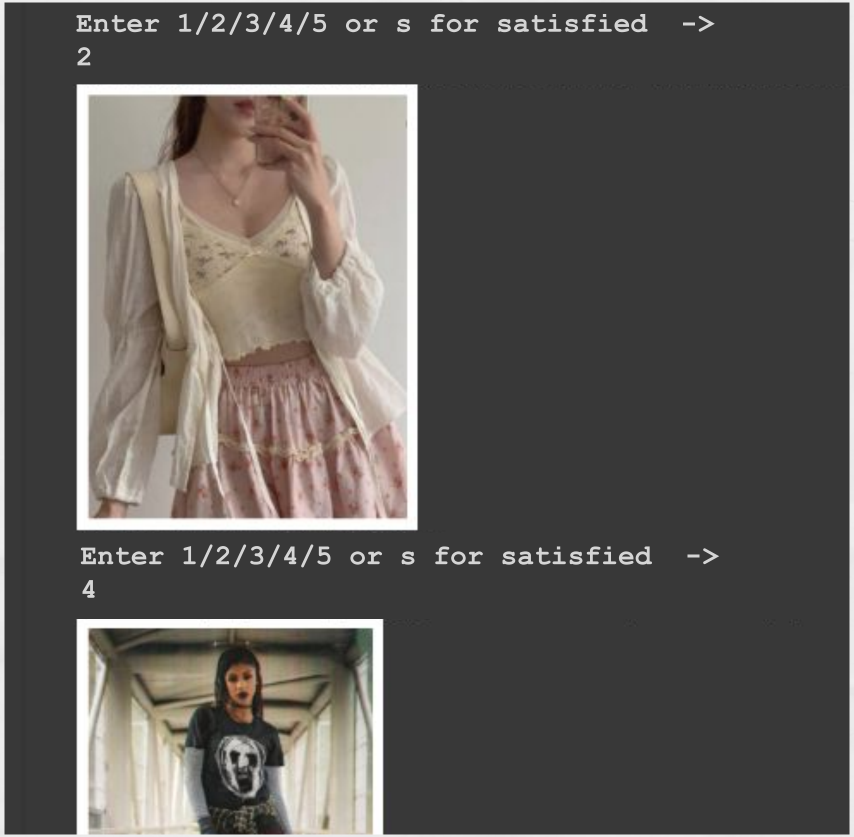
3 – Update weights by rewarding high ratings/punishing low ones

4 – Apply Epsilon-Greedy Algorithm:

I. Assign an epsilon value
II. With epsilon probability, we **explore** (randomly select new image based on weights)
III. With 1 – epsilon probability, we **exploit** (select the image with the highest weight)

5 – Delete the image from the dictionary and choose a new one

Results



```
Enter 1/2/3/4/5 or s for satisfied  ->
2
```

```
Enter 1/2/3/4/5 or s for satisfied  ->
4
```

Current Functionality

- Images load and display
- User inputs affect probability
- Model adjusts based on attributes

Current Flaws

- Dataset is too small and not varied enough
- Weights change exponentially → Sometimes certain attributes can dominate the model

Challenges We Faced

- Integrating code on Google Colab
- Manually labelling and compiling the images
- Testing our data
- Adjusting our probability weights/image selection algorithm
- Debugging

Next Steps + Applications

- Add more attributes and expand the dataset
- Add a max weight value → prevent lone attributes from dominating the model

Impact

- Help reduce returns of clothing items → Fewer returns, less shipping, greater profit, less environmental waste
- Global fashion industry is worth 1.7 trillion dollars!
- Fashion industry causes ~10% of global carbon emissions

Thank you!