



StylePal

An Automated Personal Stylist

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Metis Career Day
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Computer Vision Based Recommendation System





Data: Polyvore



750,000
Images
User
Generated
Outfits
Each
Outfit
Receives
Votes

Model 1: Convolutional Neural Network Autoencoder

Input

Convolution

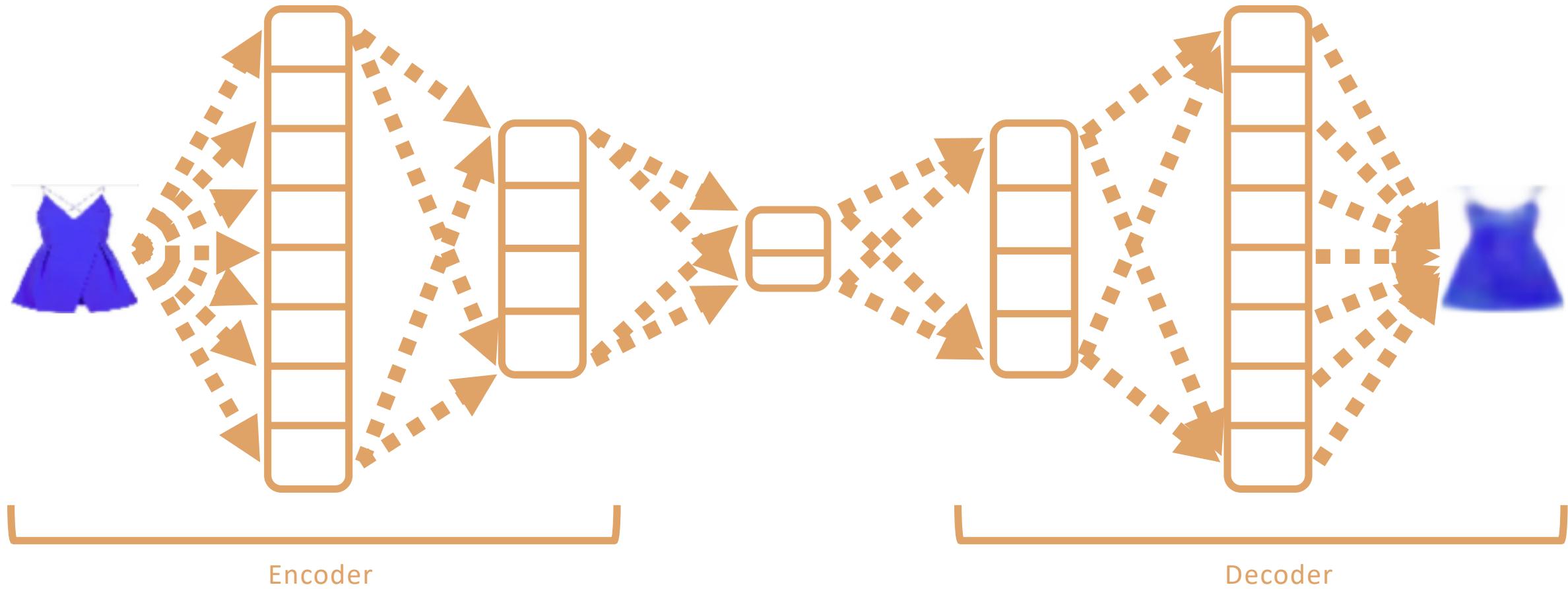
Pool

Encoded Layer

Up Sample

Convolution

Output



Model 1: Convolutional Neural Network Autoencoder

Input

Convolution

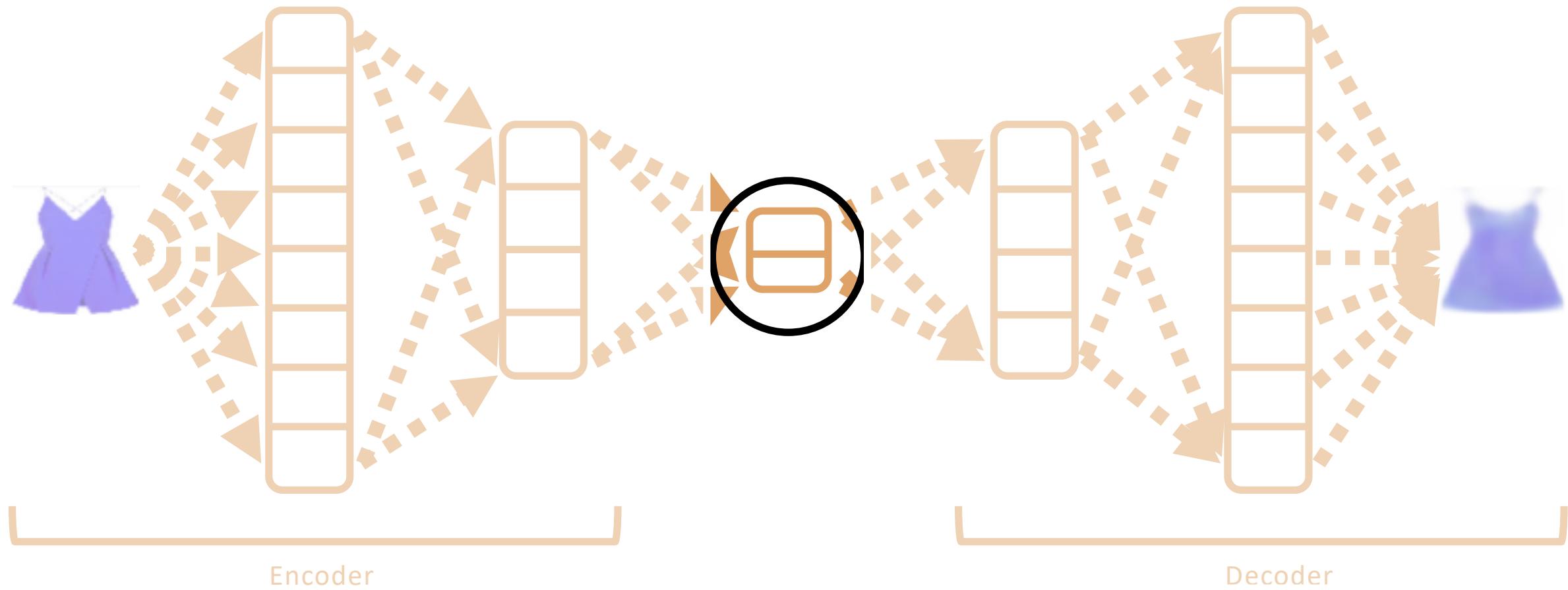
Pool

Encoded Layer

Up Sample

Convolution

Output



Separate Models for Each Type of Clothing

Bag Model

Top Model

Sweater Model

Dress Model

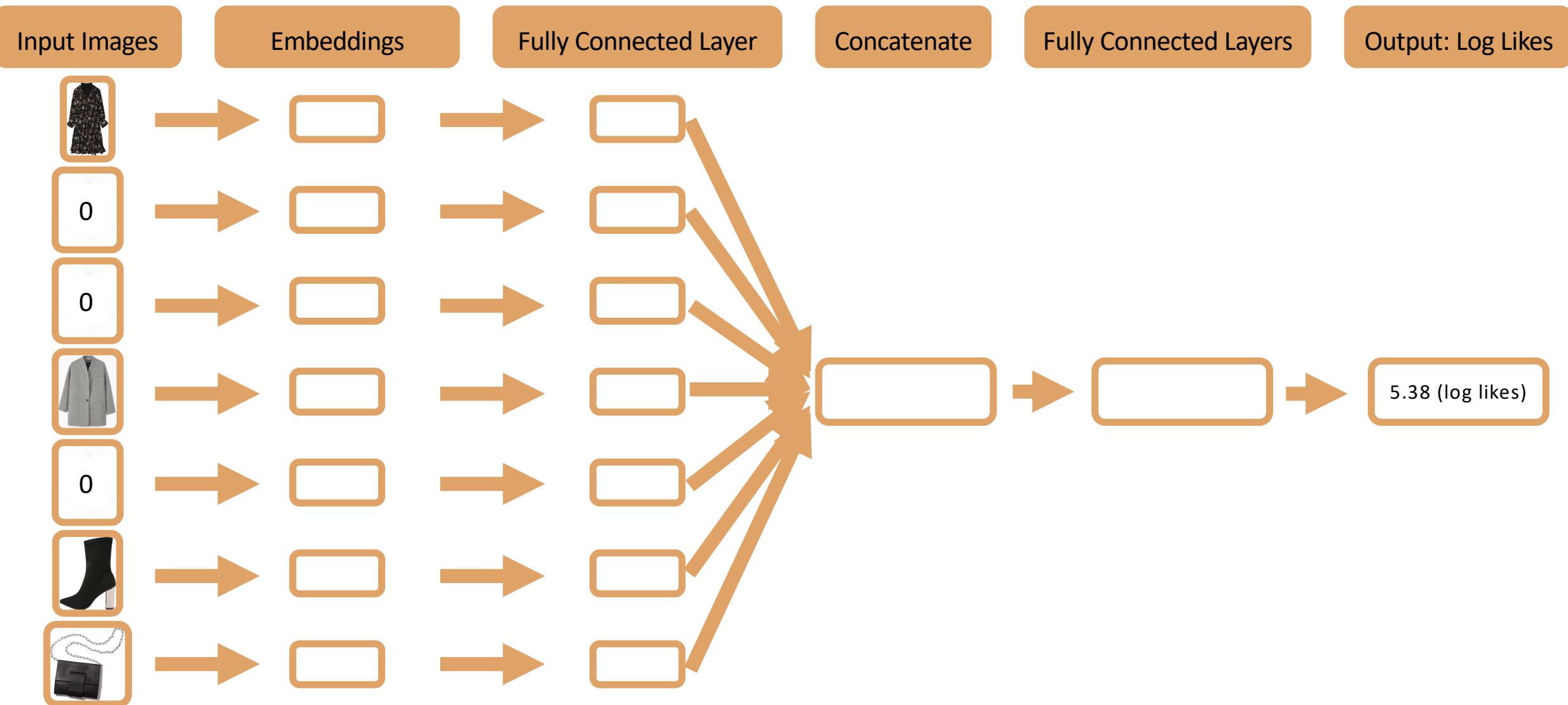
Bottom Model

Outerwear Model

Shoe Model



Model 2: Multi-Input CNN Using Autoencoded Embeddings



User Input



All Possible Outfits



All Possible Outfits



All Possible Outfits



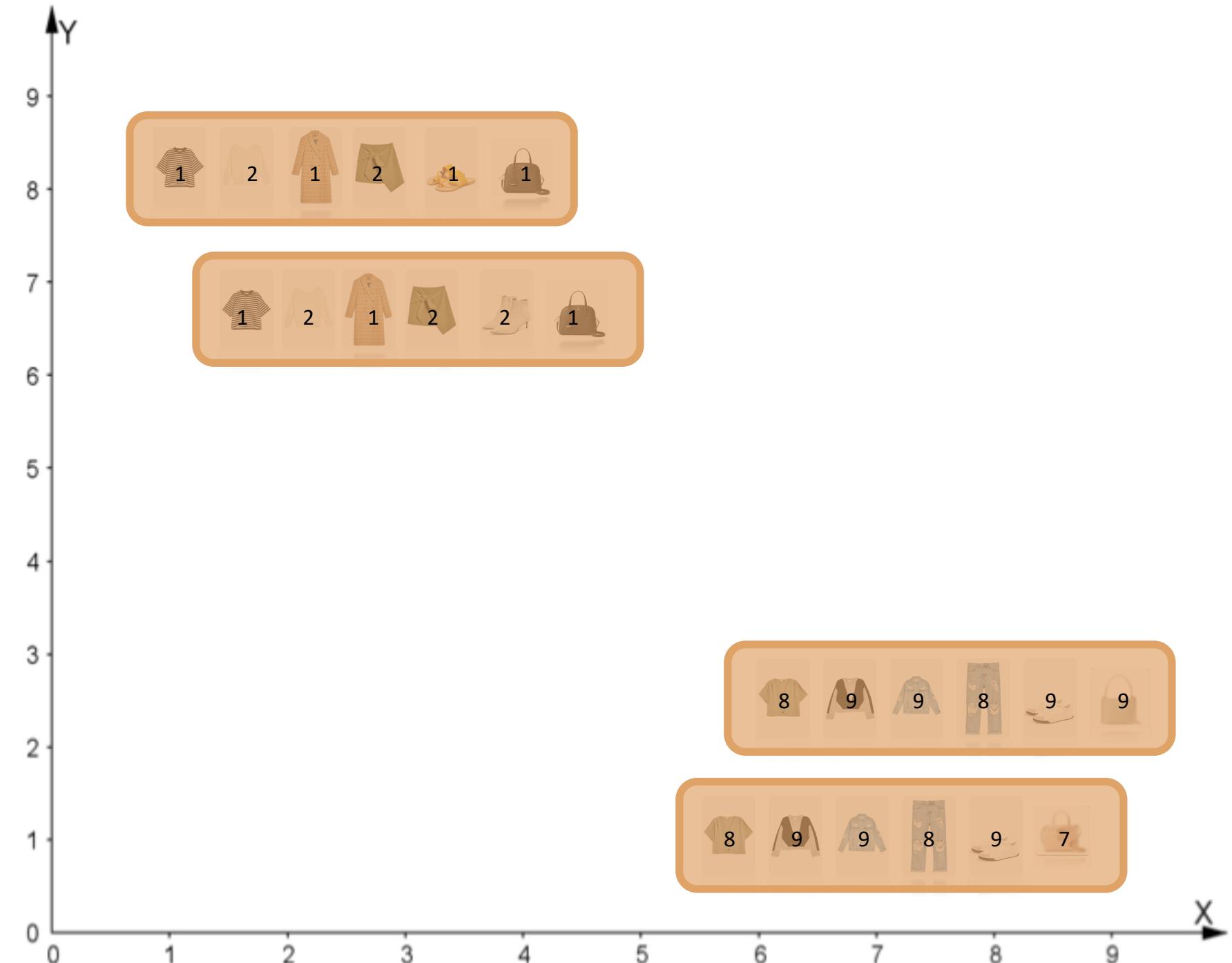
Group Similar Outfits Using Embeddings



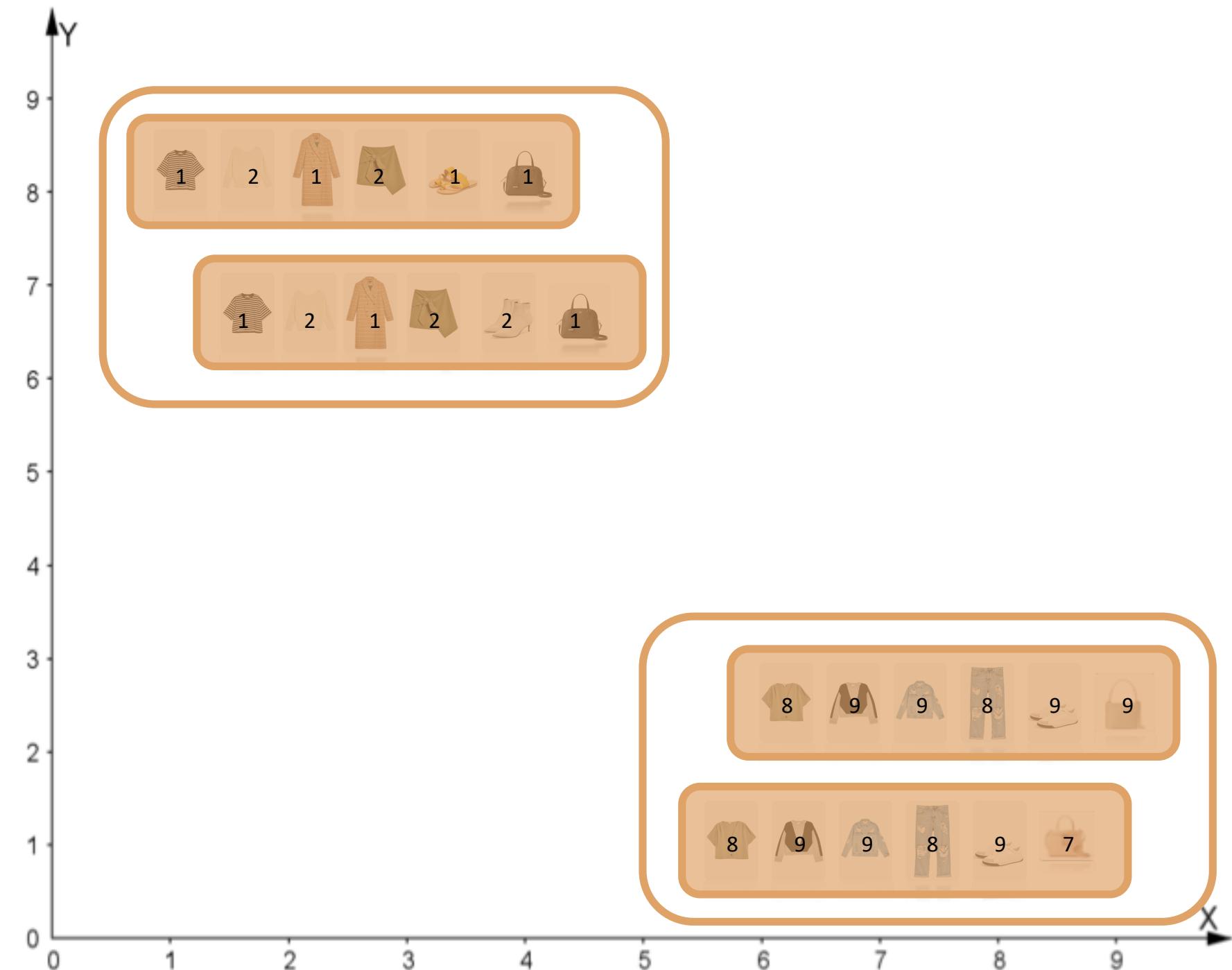
Group Similar Outfits Using Embeddings



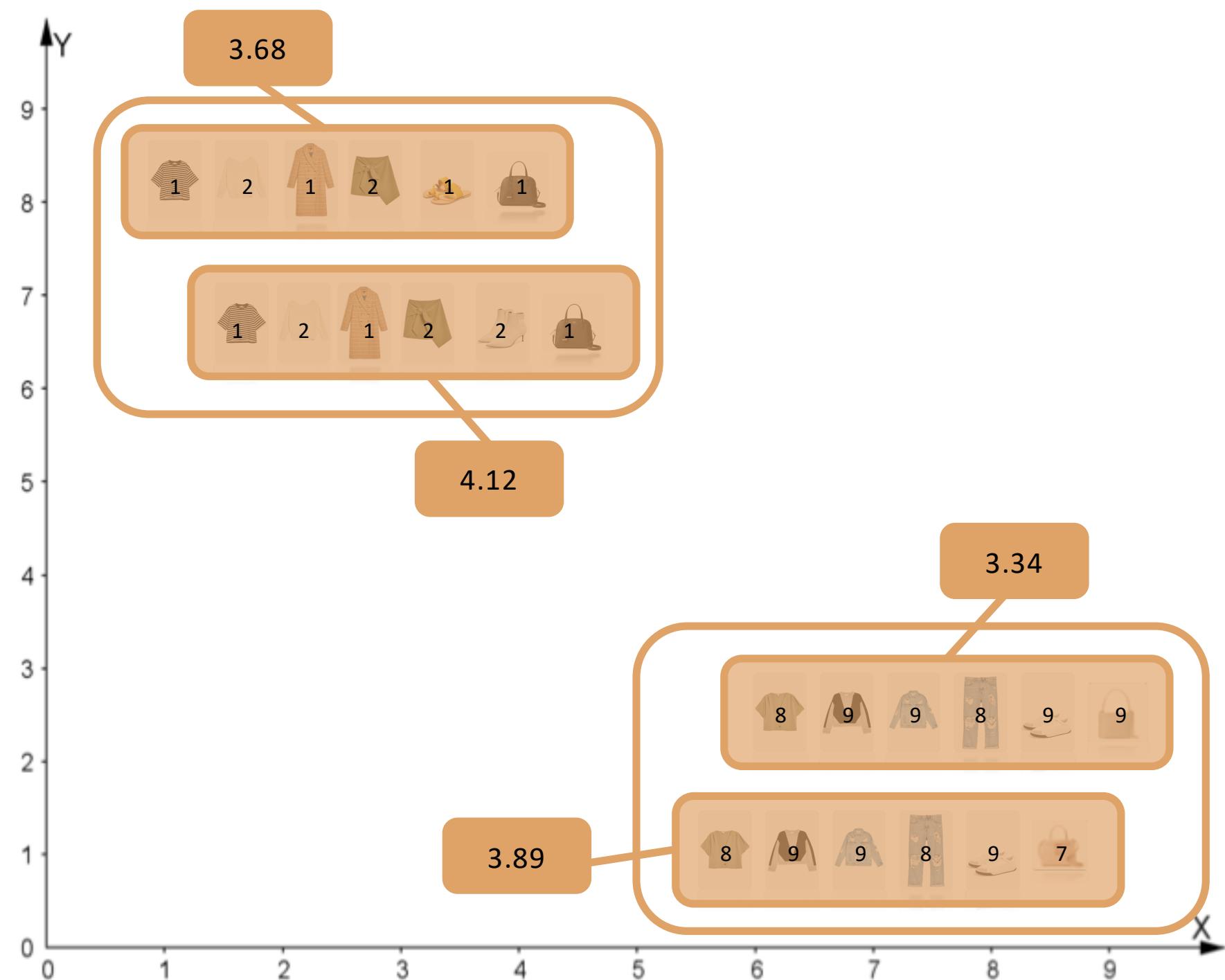
Group Similar Outfits Using Embeddings



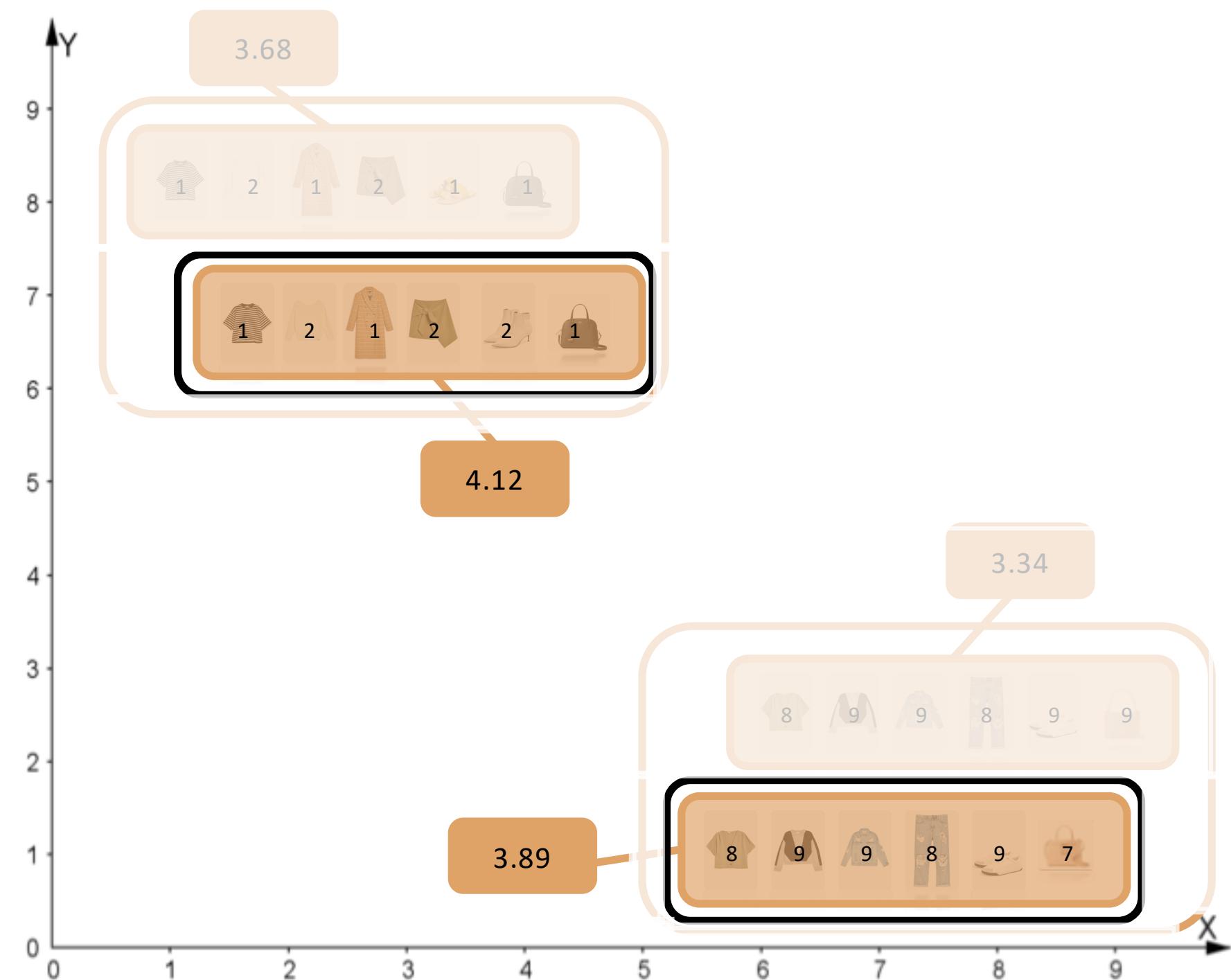
Group Similar Outfits Using Embeddings



Predict Scores For Each Outfit



Return the Best Outfit From Each Group



Recommendation Results



Recommend New Purchases



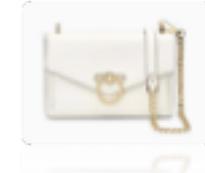
User Input



User Input

Clothing Category:

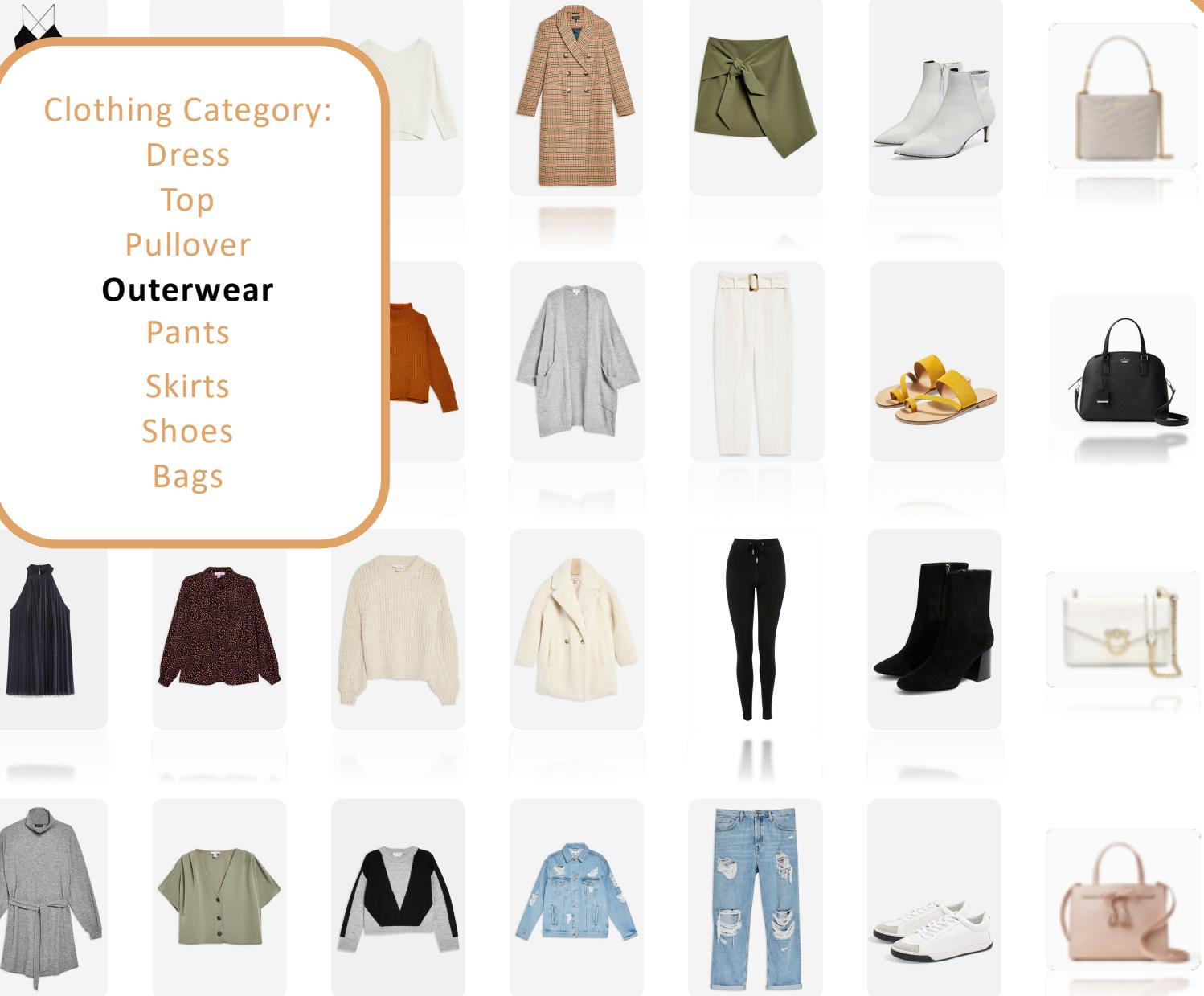
- Dress
- Top
- Pullover
- Outerwear
- Pants
- Skirts
- Shoes
- Bags



User Input

Clothing Category:

Dress
Top
Pullover
Outerwear
Pants
Skirts
Shoes
Bags



User Input

Clothing Category:

- Dress
- Top
- Pullover
- Outerwear**
- Pants
- Skirts
- Shoes
- Bags

Price:

- \$0 - \$50
- \$50 - \$100
- \$100 - \$150
- \$150 up



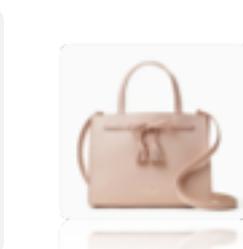
User Input

Clothing Category:

- Dress
- Top
- Pullover
- Outerwear**
- Pants
- Skirts
- Shoes
- Bags

Price:

- \$0 - \$50
- \$50 - \$100
- \$100 - \$150**
- \$150 up



All Potential Purchases (Scraped From Topshop)

\$160



\$130



\$125



\$180



\$125



\$240



\$125



\$150



\$95



\$125



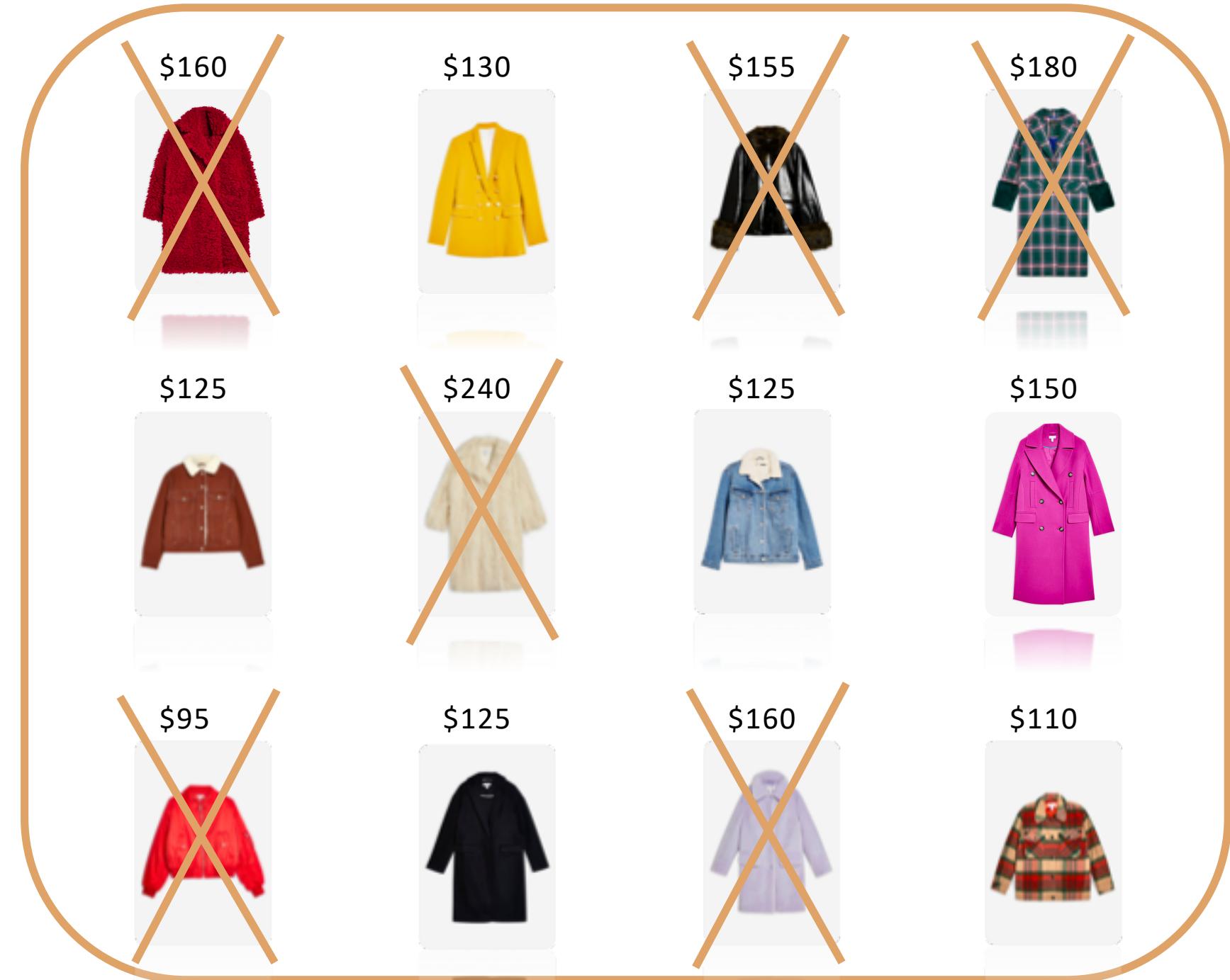
\$160



\$110



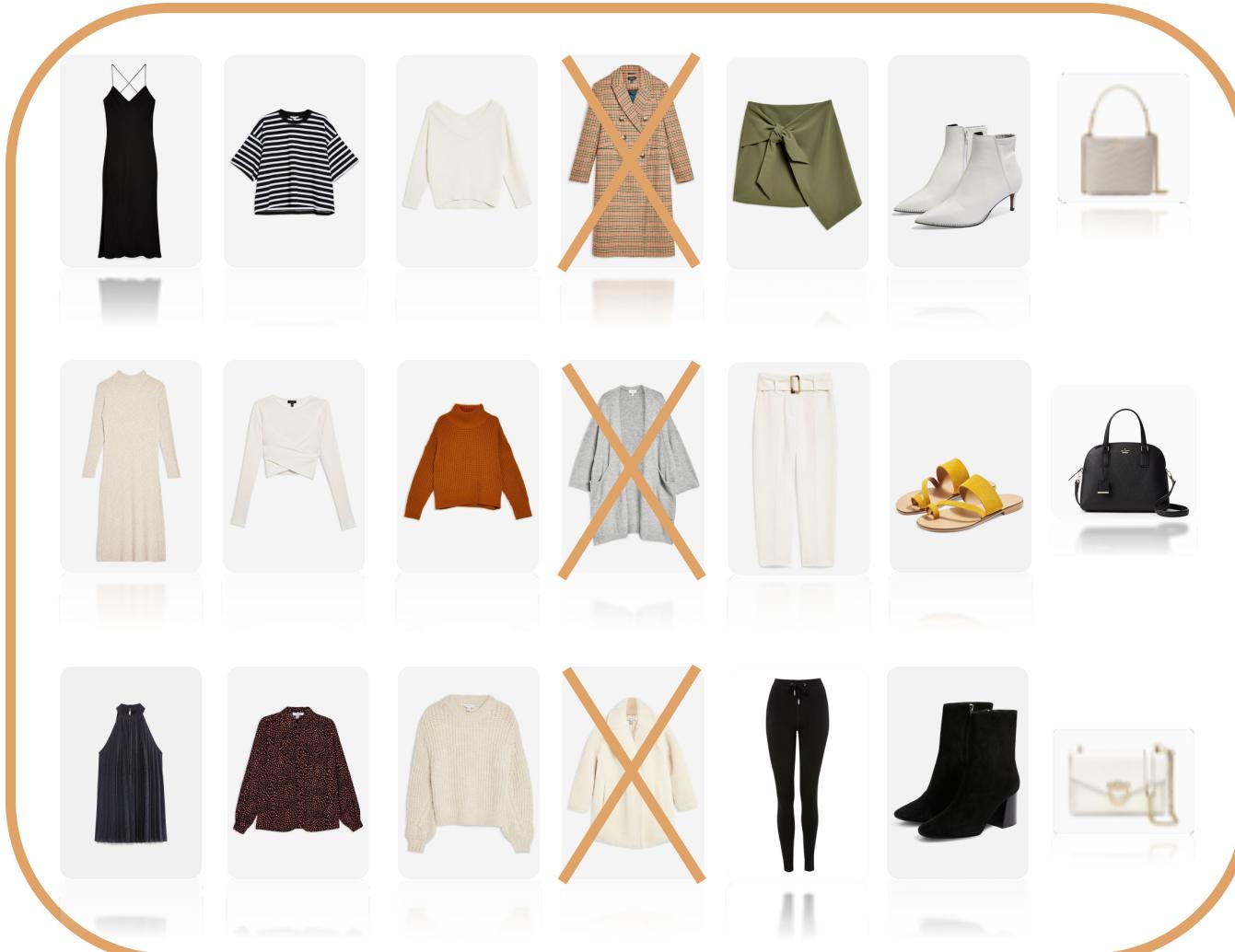
All Potential Purchases (Scraped From Topshop)



All Possible Combinations Given Each Potential Item



All Potential Purchases



User Wardrobe

All Possible Combinations Given Each Potential Item



All Possible Combinations Given Each Potential Item



4.12

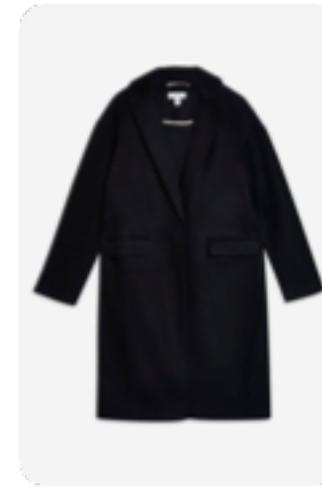
7.21

6.98

5.30

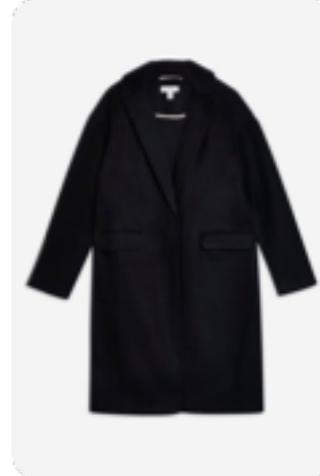
3.68

4.58



Aggregate Item Scores

Recommended Purchases



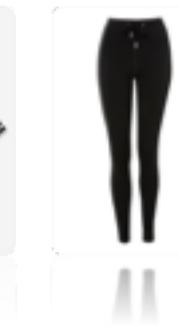
Price: \$125
[Buy Here](#)

User Clothing



Price: \$120
[Buy Here](#)

User Clothing





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Thank You!