



# How big can style be?

*Addressing high dimensionality for recommending with style*

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**Farfetch**

addressing high dimensionality for recommending with style



## embeddings, embeddings everywhere



### Visual

using product images  
feature maps



### Text

using text descriptions of  
products and brands

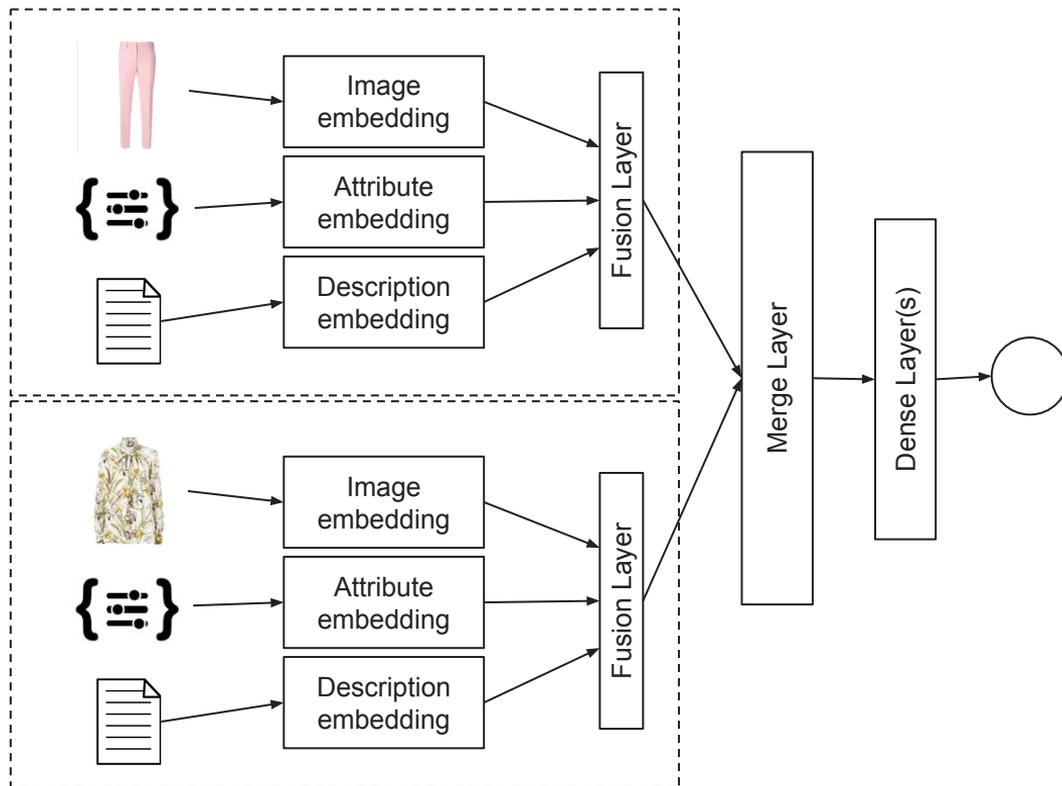


### Collaborative

user-item interaction

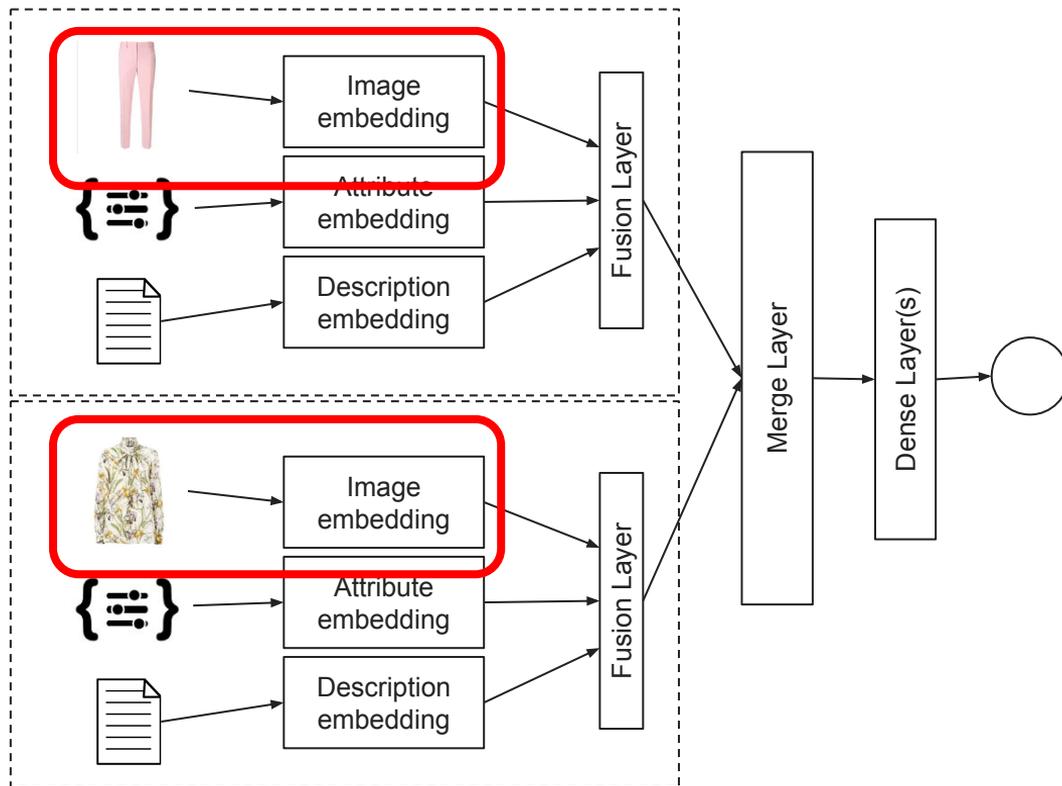
addressing high dimensionality for recommending with style

## automated outfits recommendations



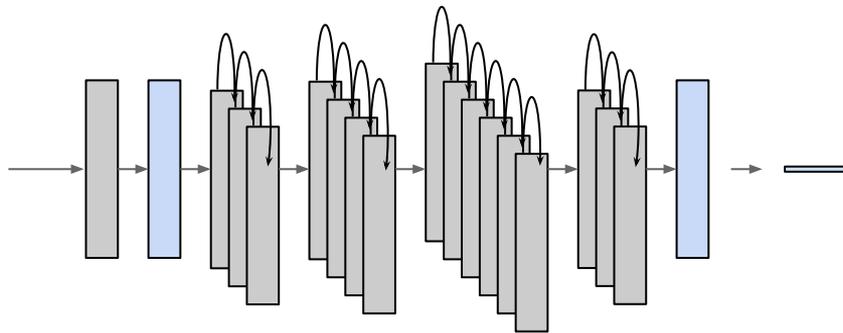
addressing high dimensionality for recommending with style

## automated outfits recommendations



addressing high dimensionality for recommending with style

# similar items recommendations



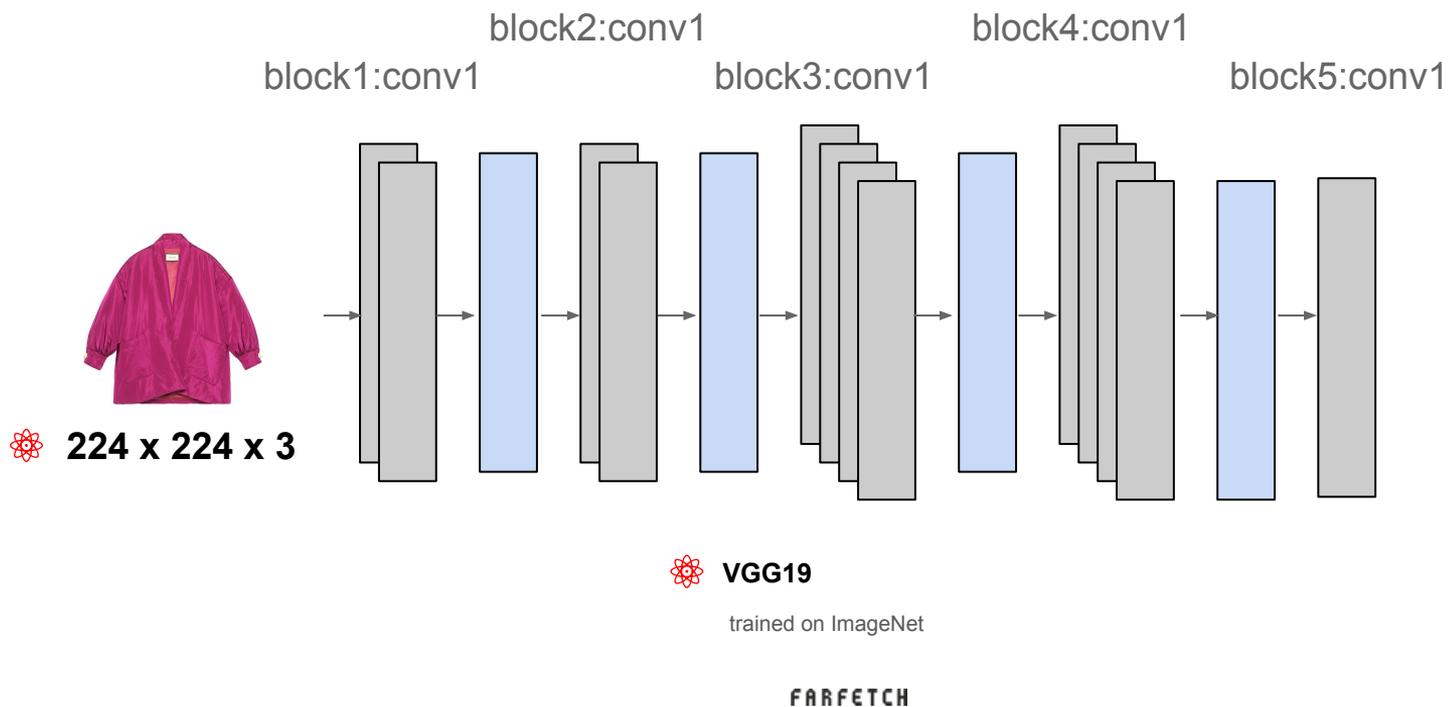
 **Resnet50**  
trained for ImageNet



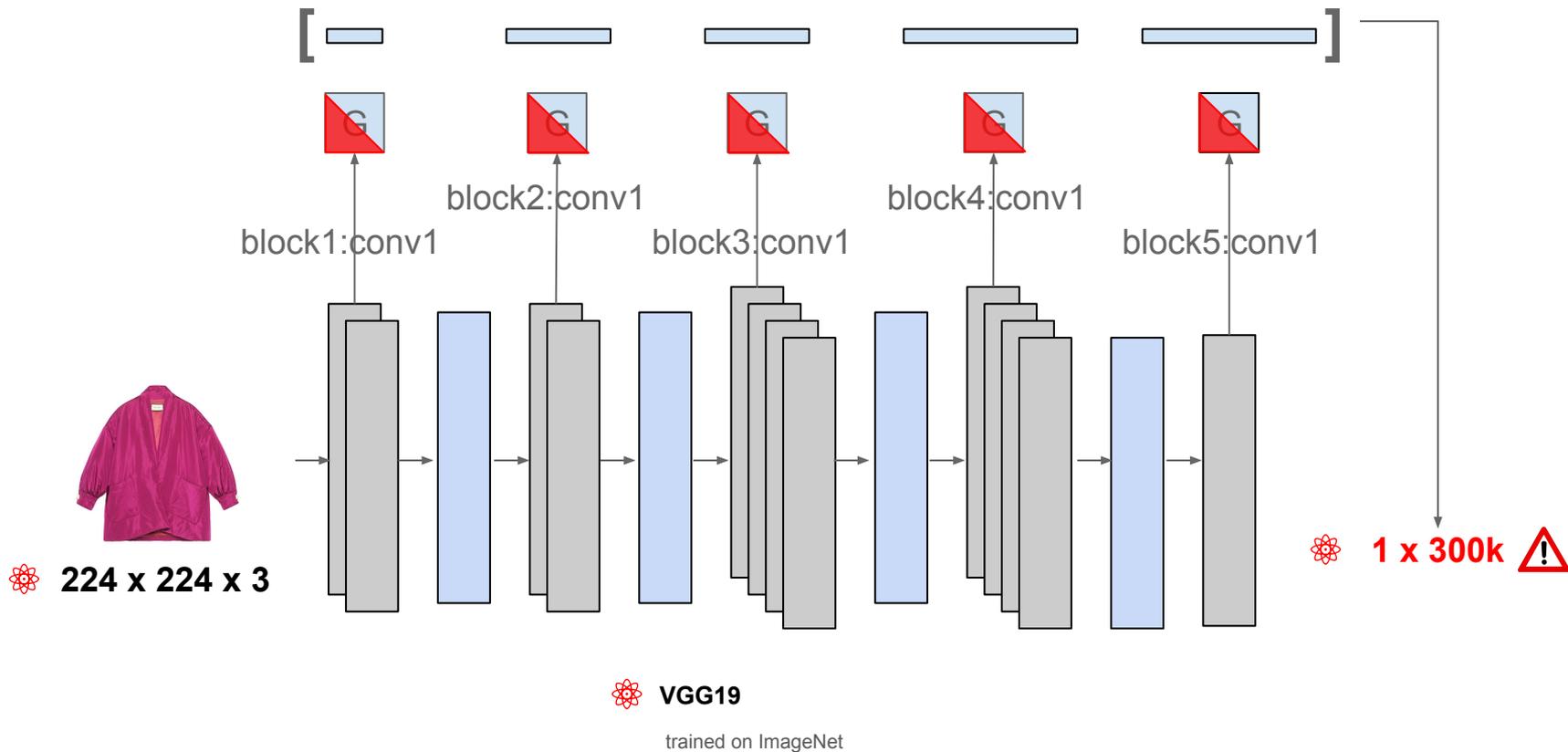
# Extract style features



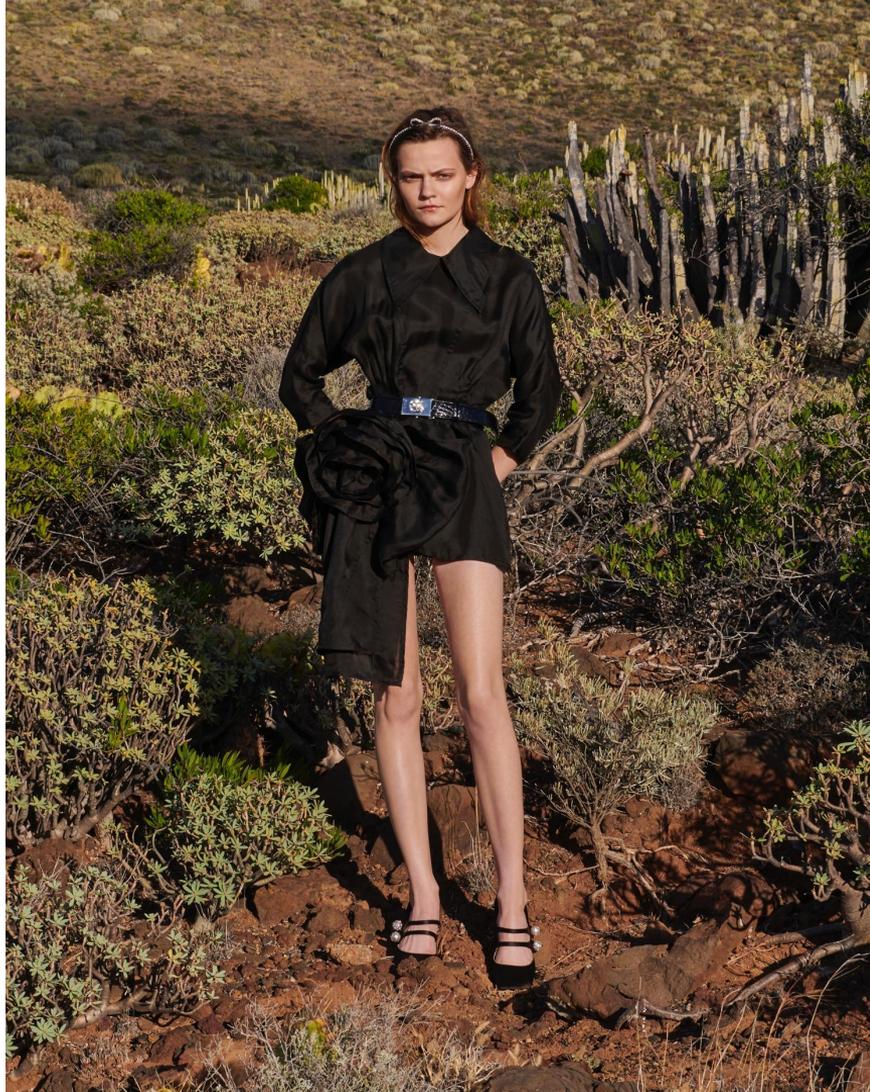
## Gatys et al., 2015. A Neural Algorithm of Artistic Style.



addressing high dimensionality for recommending with style

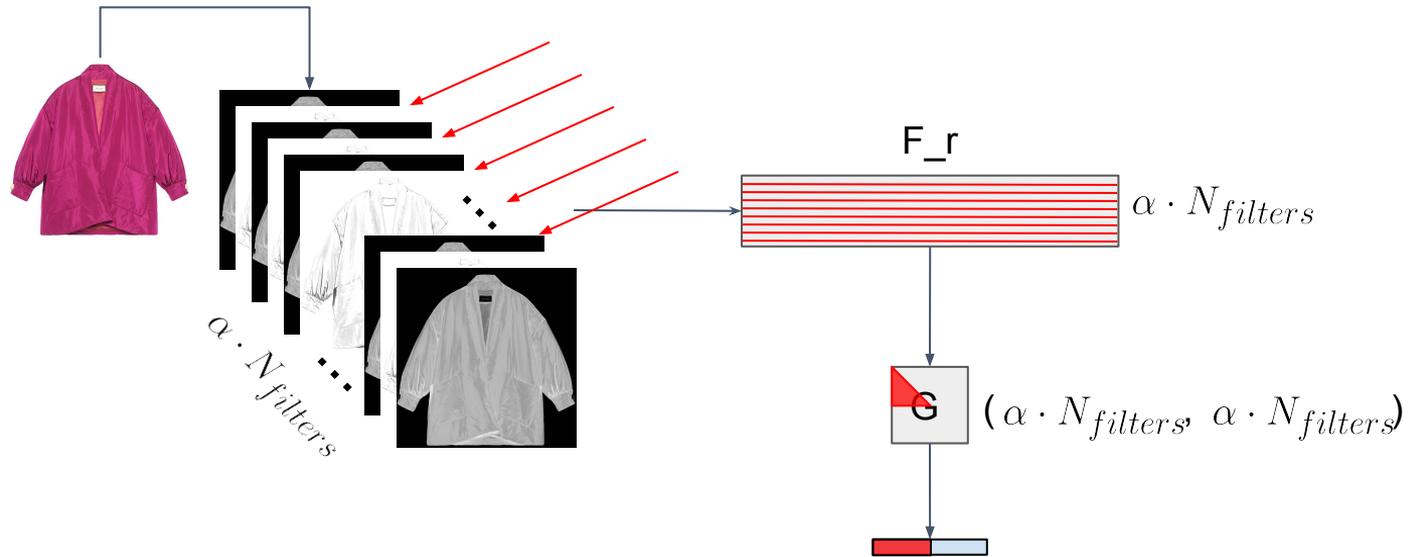


# Reducing the embeddings dimension



# Feature maps sampling

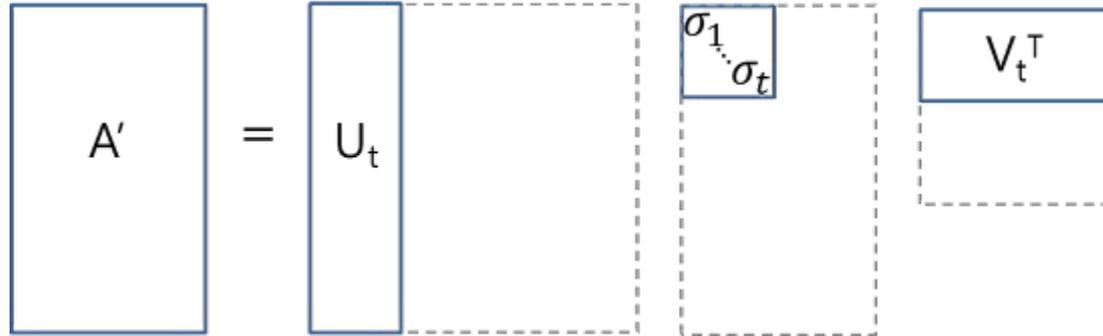
reducing from 300k to 3k



$$\frac{1}{2} \cdot \alpha \cdot N_{filters} \cdot (\alpha \cdot N_{filters} - 1)$$

# T-SVD

🌀 reducing from 300k to 512



**Compare the  
embeddings**



# related items recommendations

most similar item



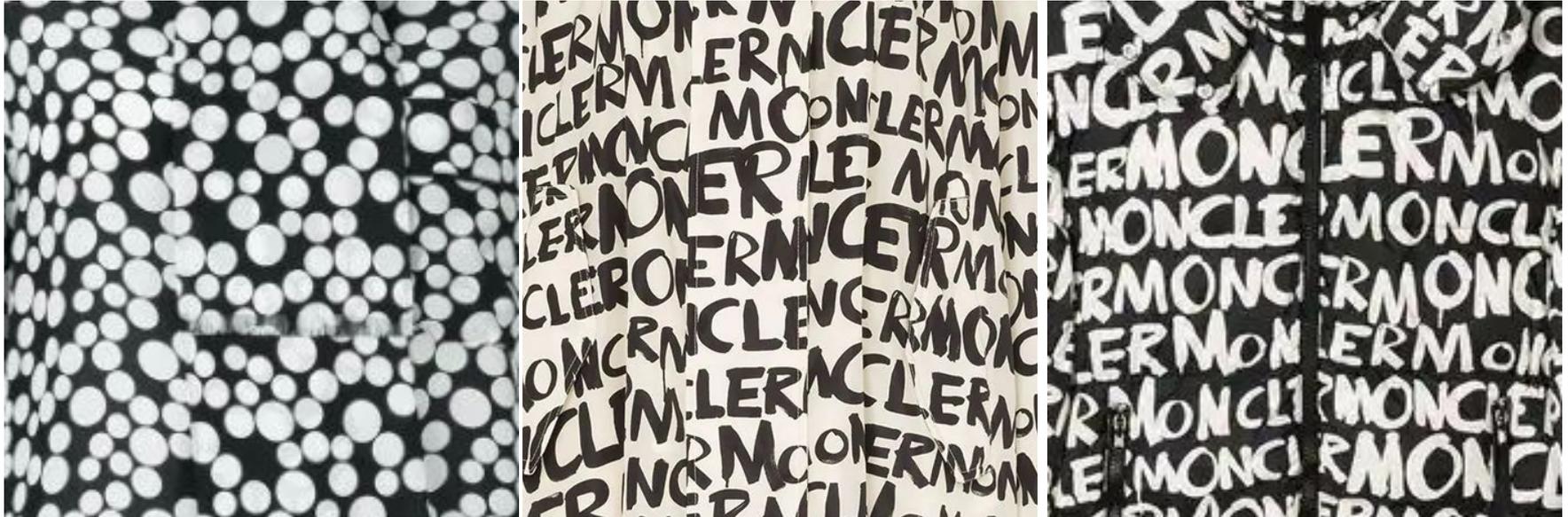
Resnet50 top layer



Style embeddings

## related items recommendations

most similar item



Resnet50 top layer



Style embeddings

# Takeaways

## **Style embeddings manage to map distinctive style features**

- Better attention to textures and prints

## **The dimensionality reduction works**

- 512 features are sufficient to provide similar results to the vector of 300k

**FARFETCH**

**Thank you**

**check the poster for more examples!**

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