



How big can style be?

Addressing high dimensionality for recommending with style

Diogo Goncalves
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

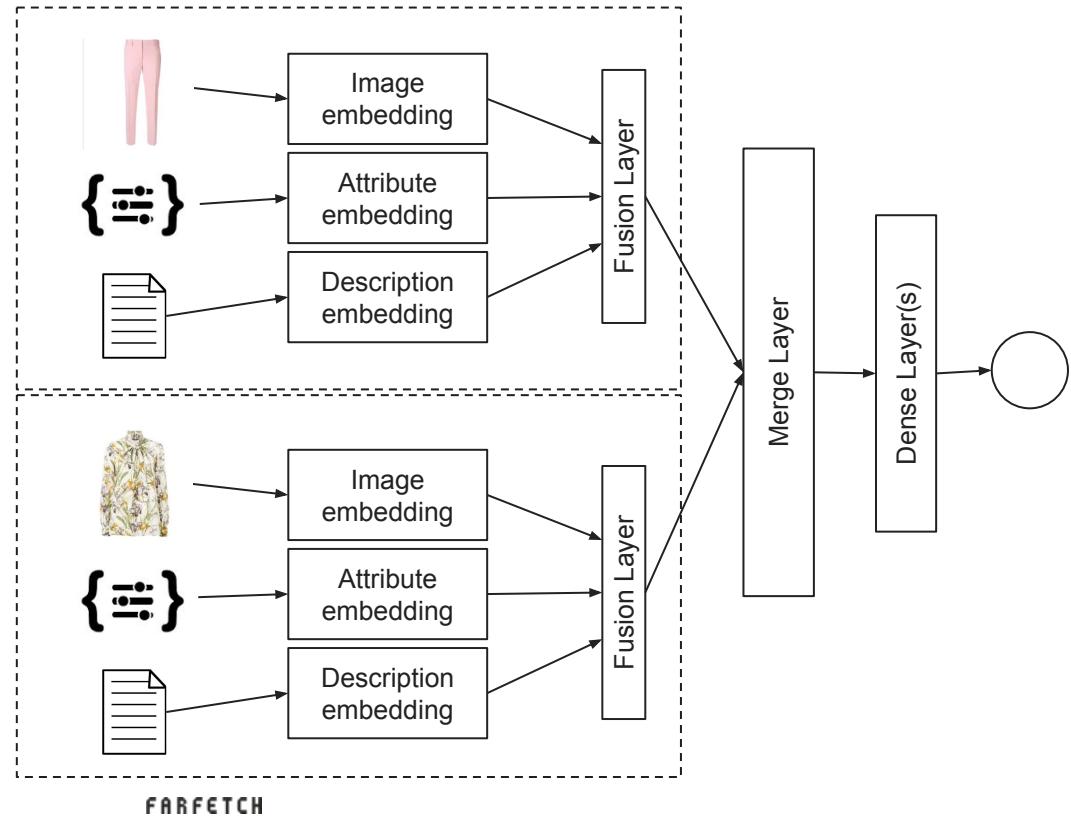


Collaborative

user-item interaction

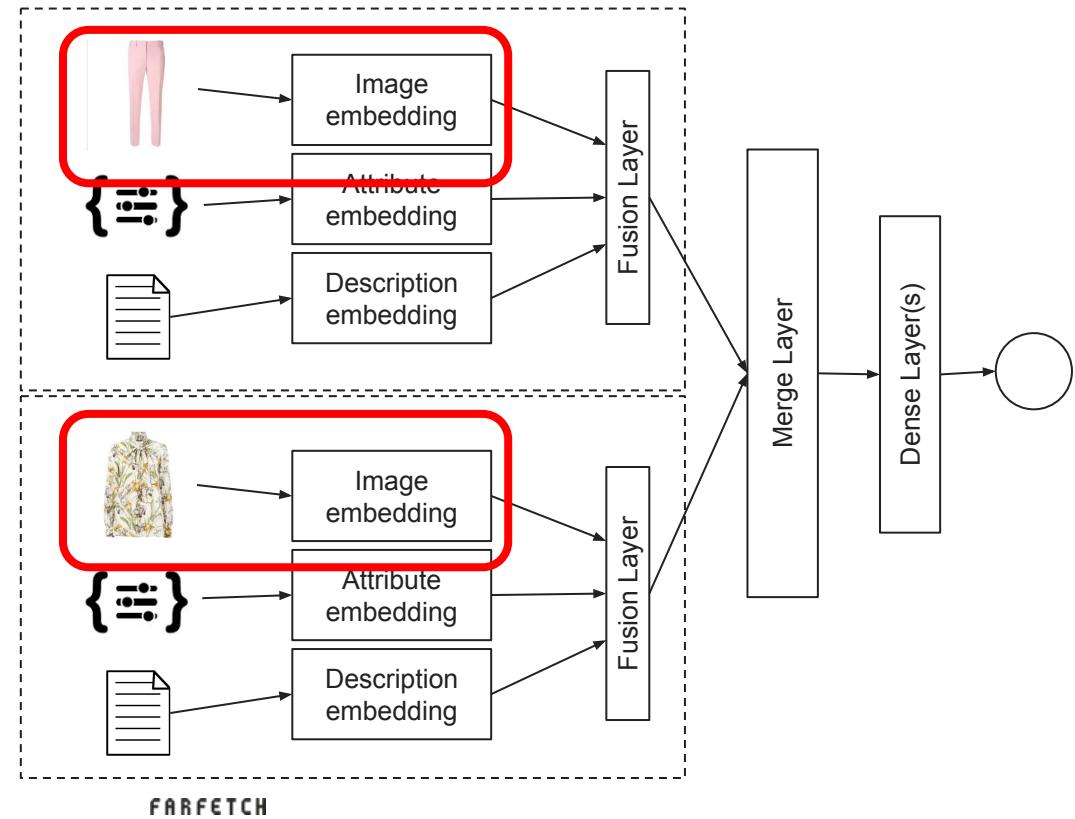
addressing high dimensionality for recommending with style

automated outfits recommendations



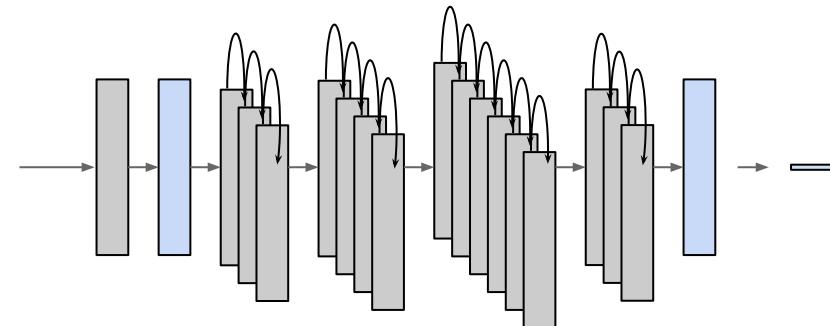
addressing high dimensionality for recommending with style

automated outfits recommendations



addressing high dimensionality for recommending with style

similar items recommendations



Resnet50

trained for ImageNet

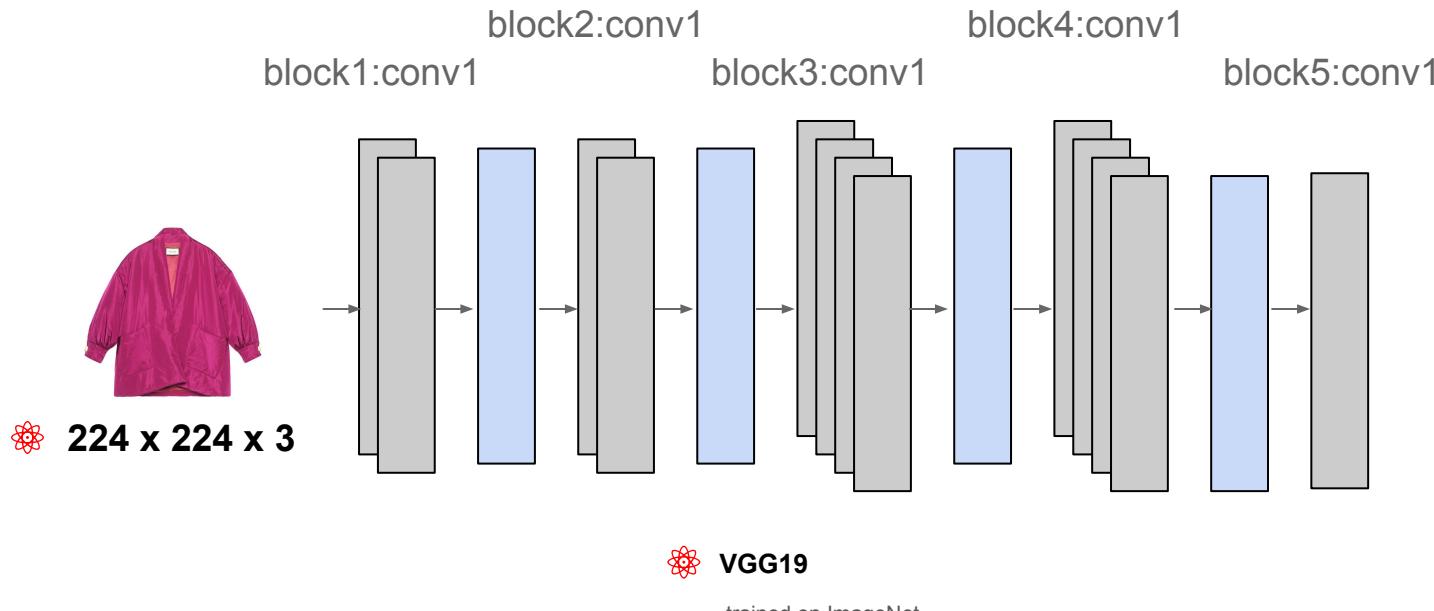


Extract style features

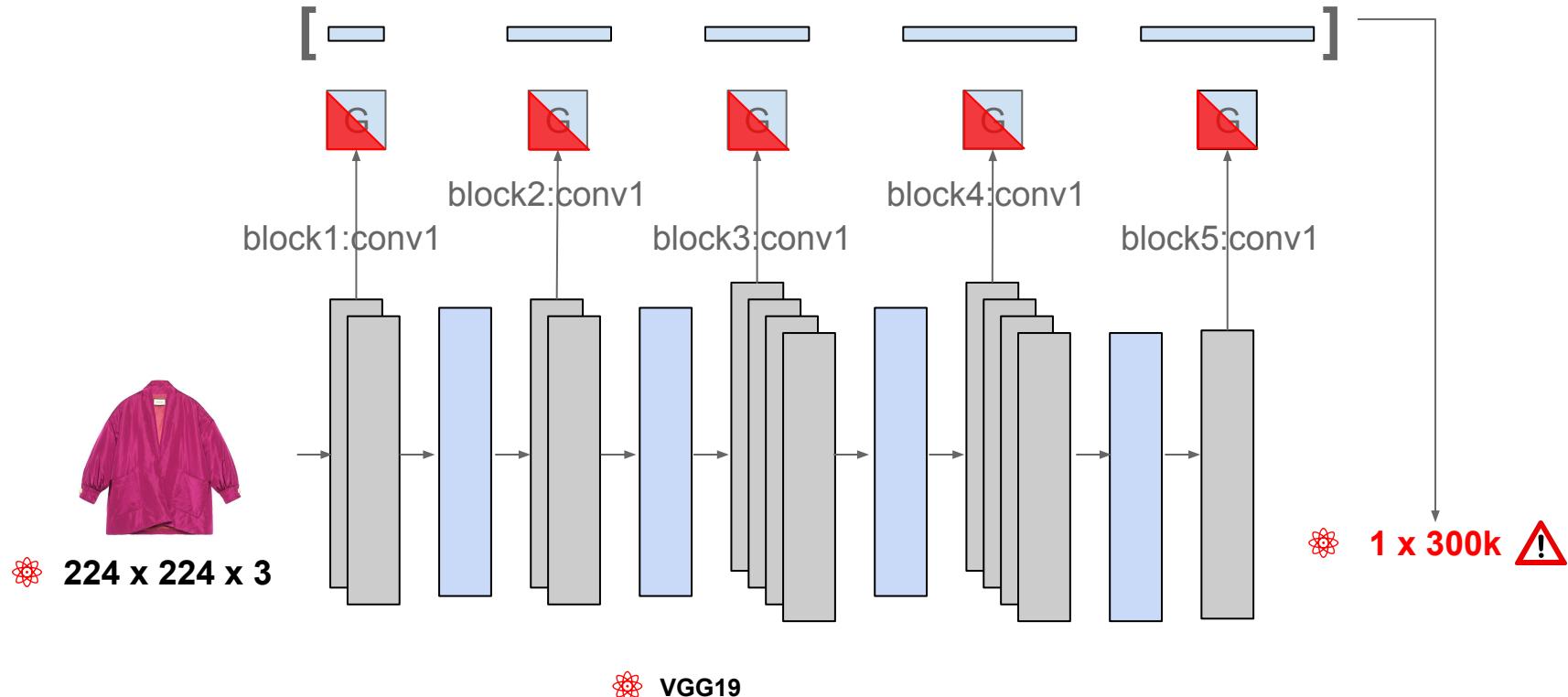


addressing high dimensionality for recommending with style

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

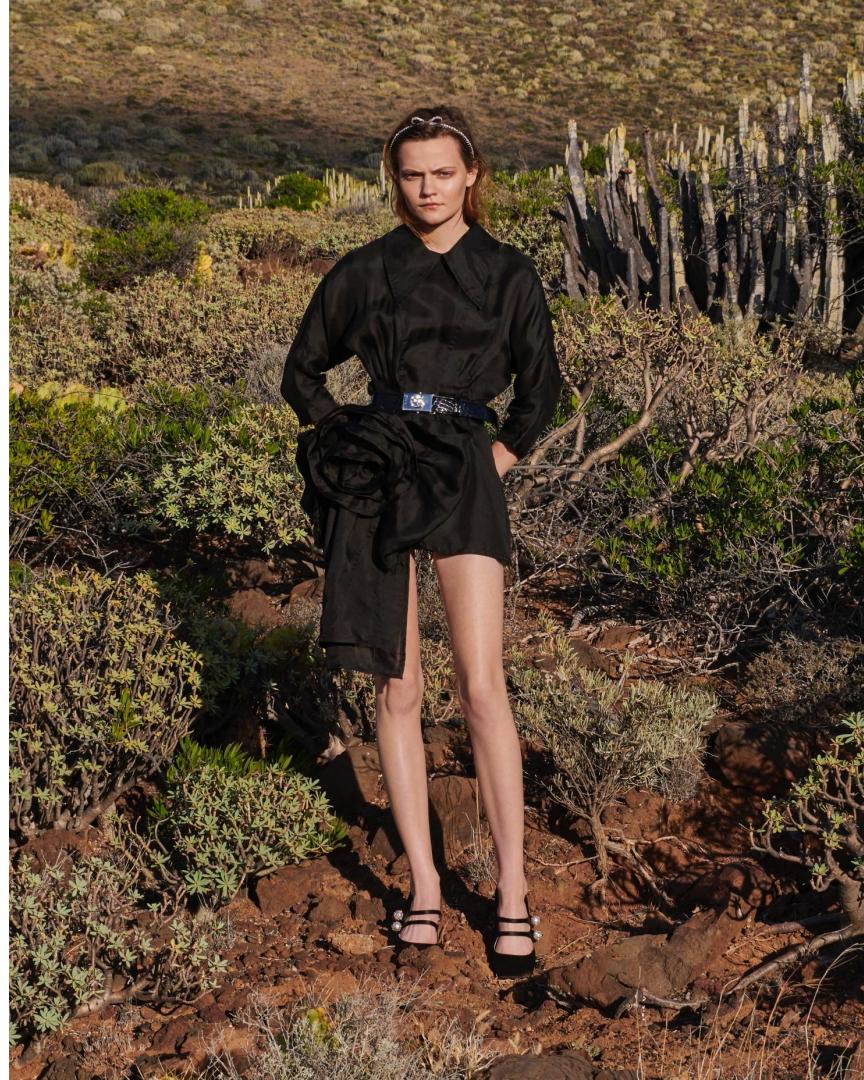


addressing high dimensionality for recommending with style



trained on ImageNet

Reducing the embeddings dimension

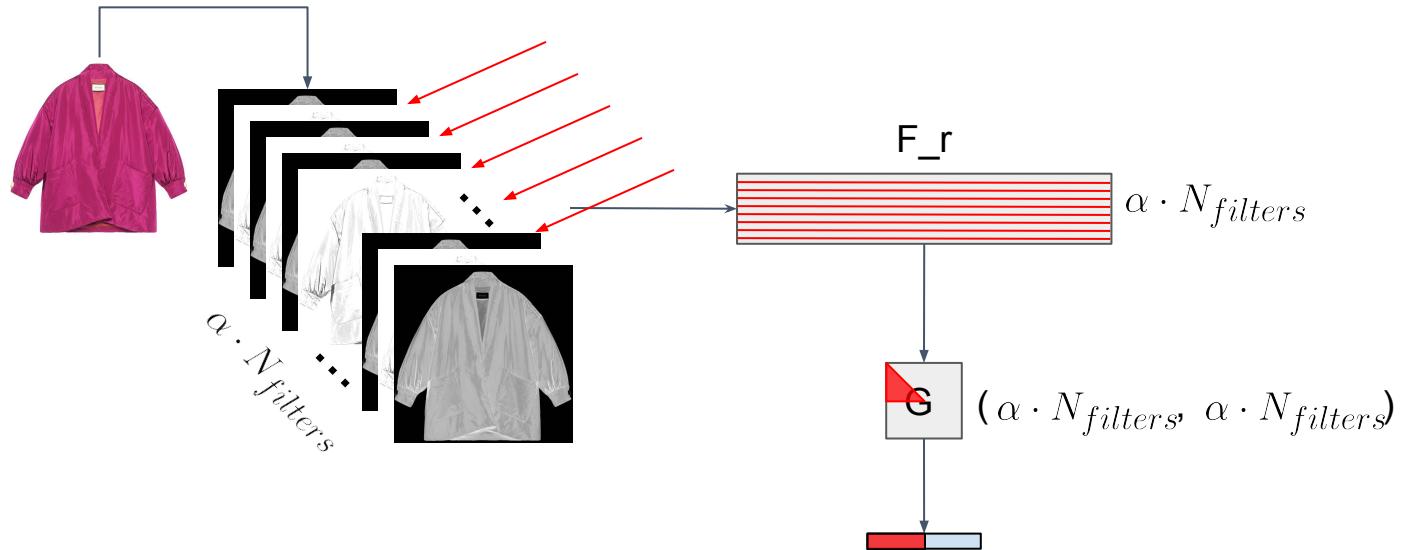


addressing high dimensionality for recommending with style

Feature maps sampling



reducing from 300k to 3k

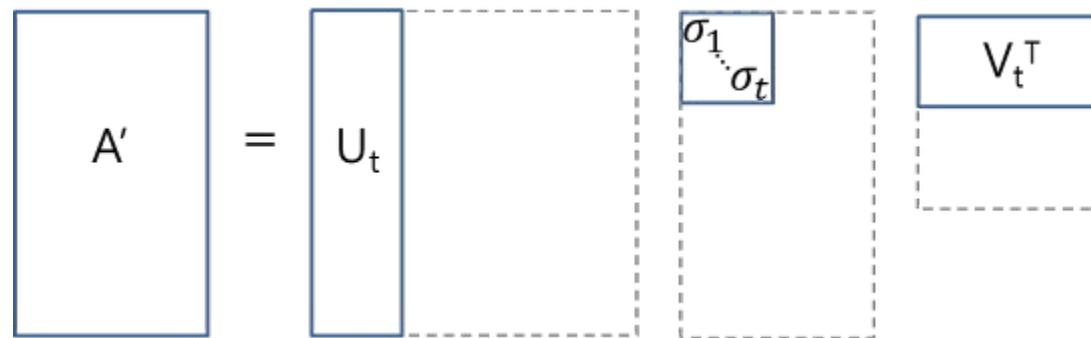


$$\frac{1}{2} \cdot \alpha \cdot N_{filters} \cdot (\alpha \cdot N_{filters} - 1)$$

addressing high dimensionality for recommending with style

T-SVD

- reducing from 300k to 512



Compare the embeddings



addressing high dimensionality for recommending with style

related items recommendations

most similar item



Resnet50 top layer



Style embeddings

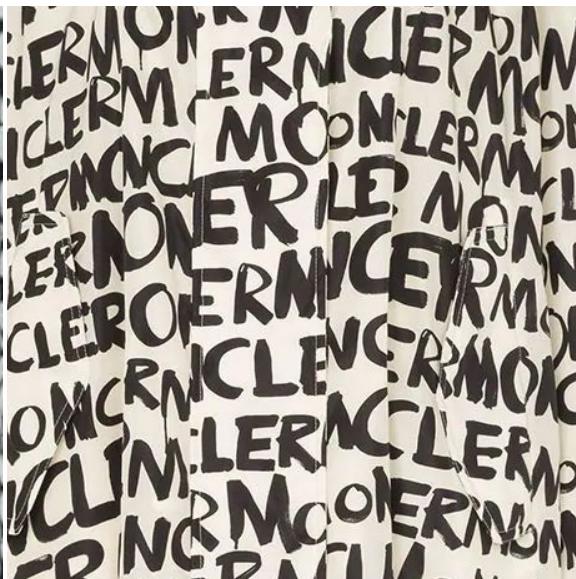
addressing high dimensionality for recommending with style

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!**

diogo.goncalves@farfetch.com

FARFETCH