

# Learning the Latent Look: Unsupervised Discovery of a Style-Coherent Embedding from Fashion Images

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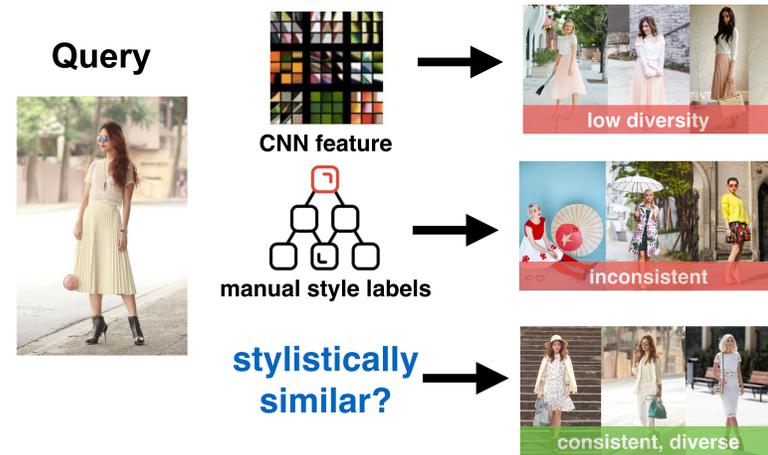


University of Texas at Austin

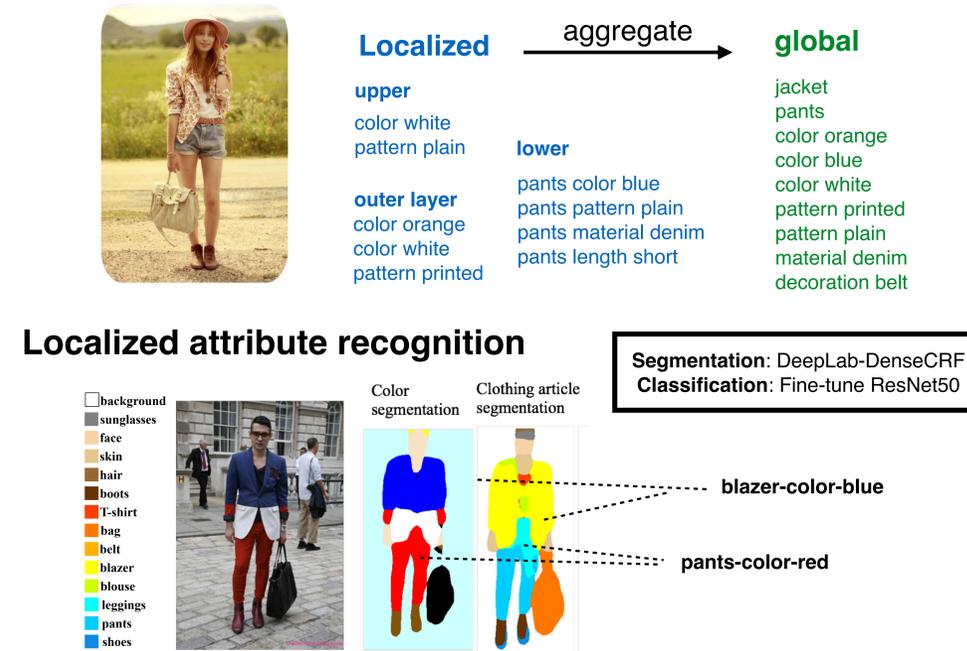
<http://vision.cs.utexas.edu/projects/StyleEmbedding/>

## Motivation

How to define similarity for fashion images?



## Approach

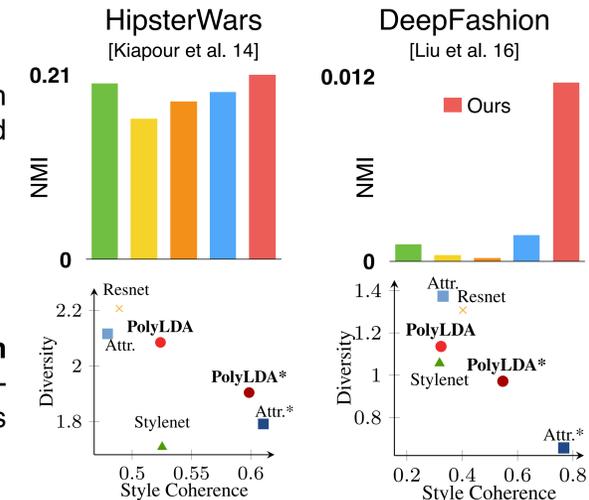


## Experiments

Baselines:

- StyleNet** [Simo-Serra et al. 16]: clothing feature trained on Fashion144K
- ResNet** [He et al. 16]: last layer of (ImageNet pretrained) ResNet
- Attr-ResNet**: ResNet-50 fine-tuned on our attributes
- Attribute**: Indicator vectors

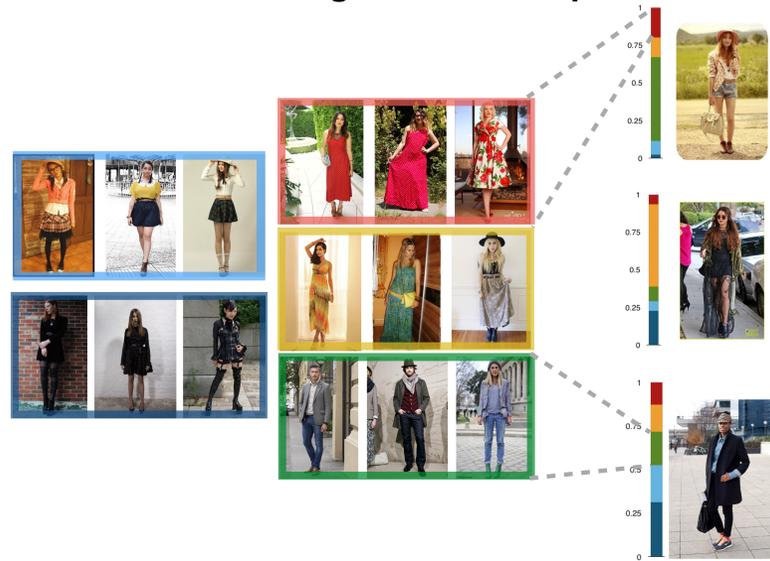
Discovered styles align with human defined style labels



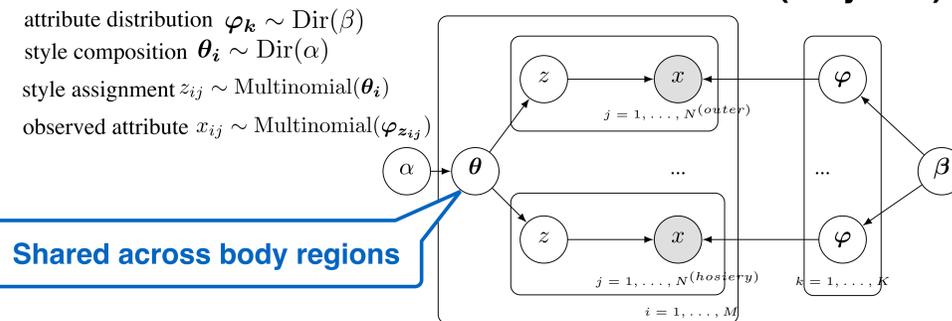
Our representation retrieves most style-coherent, diverse outfits

## Proposed Method

- Discover styles from unlabeled images
- Style-coherent representation



## Style modeling by Polylingual Latent Dirichlet Allocation (PolyLDA)

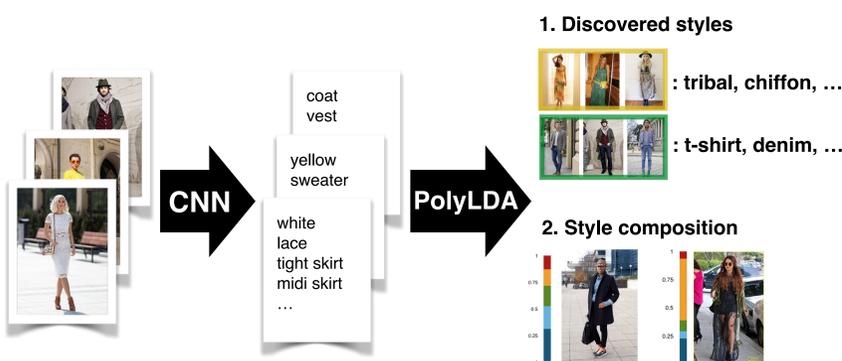


LDA: decouples different regions | PolyLDA: across whole body

LDA: decouples different regions		PolyLDA: across whole body	
Topic 1	Topic 2	Topic 1	Topic 2
U shirt collar	L skirt	O deco button	O length short
U deco button	L skirt short	O pattern plain	O sleeve long
U buttoned	L skirt full	O blazer	O pullover
G deco button	L skirt pleat	U buttoned	U shirt collar
U sleeve long	L skirt high-rise	U shirt collar	U color white
G pattern plaid	L skirt full	L length long	L skirt short
G pattern plain	G front pullover	L shape straight	L skirt full
	G deco button	G deco button	H pattern plain
		G pants	H length short
		G jacket	G sweater

U: upper body  
L: lower body  
O: outer layer  
H: hosiery  
G: global

## Overview



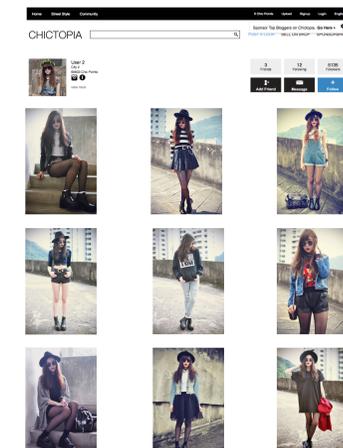
## Applications

Traversing styles:



Summarizing styles:

Given a gallery of photos



Summarize by dominant styles

