Where to Buy It: Matching Street Clothing Photos in Online Shops

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Exact Street to Shop

Goal: Find the exact match of a garment item, pictured in a real-world photo, in an online shop.

SEE IT SNAP IT BUY IT!

Contributions:

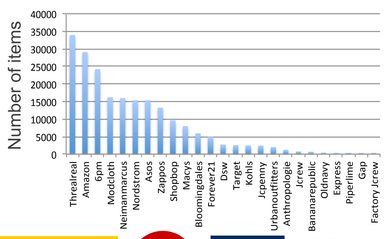
- Exact Street to Shop task
- Novel retrieval dataset
- Deep learning for clothing matching
- Human studies

Challenge: Extreme visual difference and variations within and across domains.

Street-to-shop Pairs

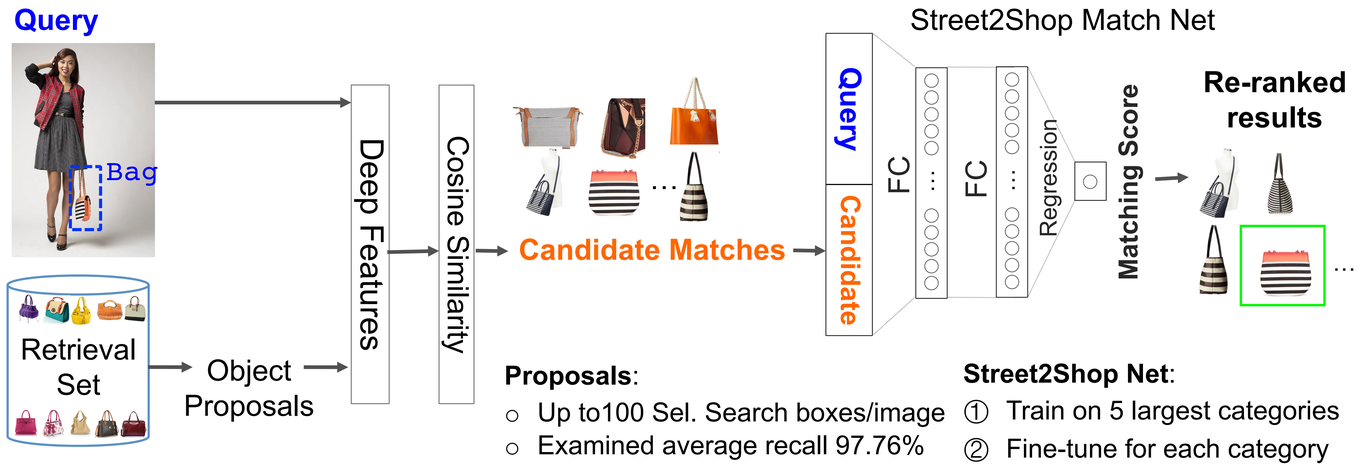
- Street bboxes collected via AMTurk

20,357	Street Photos
404, 683	Shop Photos
39, 479	Exact s2s pairs
11	Categories
25	Retailers



Retrieval

http://tamaraberg.com/street2shop

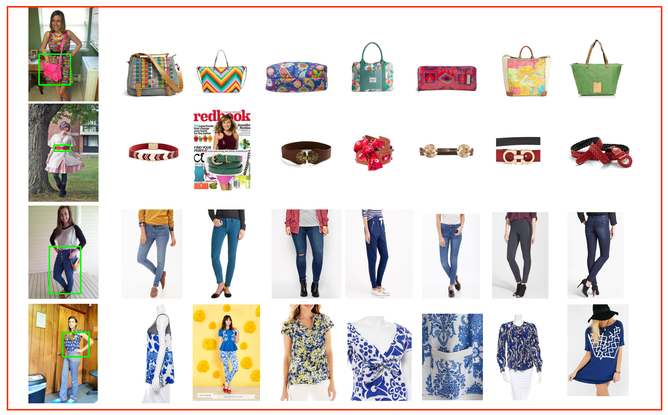


Proposals:

- Up to100 Sel. Search boxes/image
- Examined average recall 97.76%

Street2Shop Net:

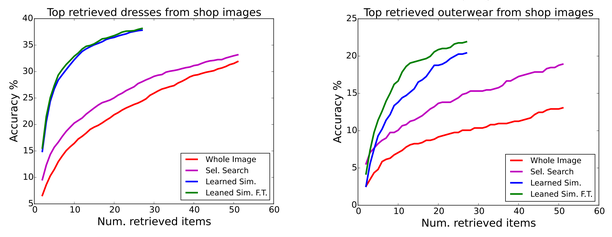
① Train on 5 largest categories
② Fine-tune for each category



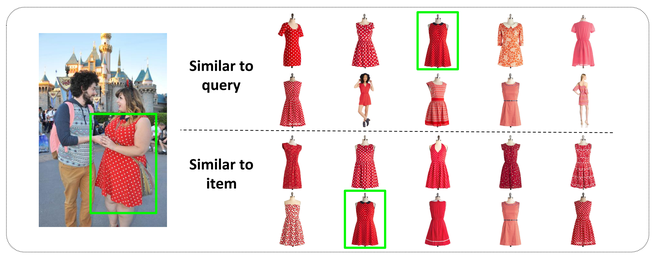
Top-20 item retrieval accuracy

Category	Whole	Proposals	Sim.	Fine Sim.
Bags	23.6	32.2	31.6	**37.4**
Belts	6.7	6.7	11.2	**13.5**
Dresses	22.2	25.5	36.7	**37.1**
Eyewear	10.1	**42.0**	27.5	35.5
Footwear	5.9	6.9	7.7	**9.6**
Hats	11.6	36.0	24.4	**38.4**
Leggings	14.5	17.2	15.9	**22.1**
Outerwear	9.3	13.8	18.9	**21.0**
Pants	14.6	21.5	28.5	**29.2**
Skirts	11.6	45.9	**54.6**	**54.6**
Tops	14.4	27.4	36.6	**38.1**

Top-k item retrieval accuracy for varying k



Can humans find the correct item?



	Source of distractors	
Category	Similar to Query (%)	Similar to Item (%)
Bags	77.3	81.6
Belts	65.5	53.9
Dresses	87.9	69.8
Eyewear	29.6	33.3
Footwear	58.9	44.1
Hats	69.8	57.0
Leggings	45.1	29.4
Outerwear	66.9	57.5
Pants	44.4	37.7
Skirts	69.4	66.6
Tops	78.1	66.1

References

S. Liu, et al. Street-to-shop: Cross-scenario clothing retrieval via parts alignment and auxiliary set. CVPR, 2012.

X. Han et al. Matchnet: Unifying feature and metric learning for patch-based matching. CVPR, 2015.