Learning Similarity Conditions Without Explicit Supervision Supplementary

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1. Sensitivity of SCE-Net To Noisy Triplets

We perform a series of ablation experiments on the UT-Zappos50k dataset to evaluate the robustness of our model to noisy, random triplets. In Table 1, we report results where we added noise to our training triplets to measure how performance would be affected as the triplet quality degrades. We find that our model is fairly robust to the inclusion of noisy triplets during training. Replacing 12.5% of training samples with random triplets on the UT-Zappos50k dataset did not seem to affect the performance of SCE-Net. In fact, our approach only has a small increase in error rate even when 50% of the training triplets were random triplets, getting an error rate of 10.04%. Notably, this result is comparable to the strongly supervised CSN [34] model trained without noise from random triplets.

Method	Number of Samples	Percentage of Random Triplets	Error Rates
CSN [34]	200000	None	10.73%
SCE-Net	100000	None	11.37%
SCE-Net	200000	None	8.29%
SCE-Net	200000	12.5%	7.44%
SCE-Net	200000	25%	10.68%
SCE-Net	200000	50%	10.04%

Table 1: Ablation results on the quality and size of training triplets in the UT-Zappos50k test set.

2. Visualizations of Compatibility Relationships

To gain insights into the compatibility relationships learned by our model, we provide visualizations of fashion items belonging to different categories from the Polyvore-Outfits [1] dataset. In the following figures, the query item is displayed on the left and items shown in the boxes represent the top 5 most compatible items, as determined by our model, of the specified categories. We note that the labels specified at the top of the boxes simply denote the categories of the items contained within the boxes and *do not* indicate that they are inputs to our model. As observed from the figures, color is usually a dominating factor in modeling fashion compatibility. Fashion items are often deemed to be compatible to each other if they are of similar or complementary shades of color (*e.g.* blue and white in Figure 2, and brown and beige in Figure 5). Besides the dominating factor of color in the fashion domain, stylistic representations are also shown to be essential in modeling outfit compatibility. For instance, we observe in Figure 3 that the specified query shoe item is most compatible with tops and bottoms of flowery designs.

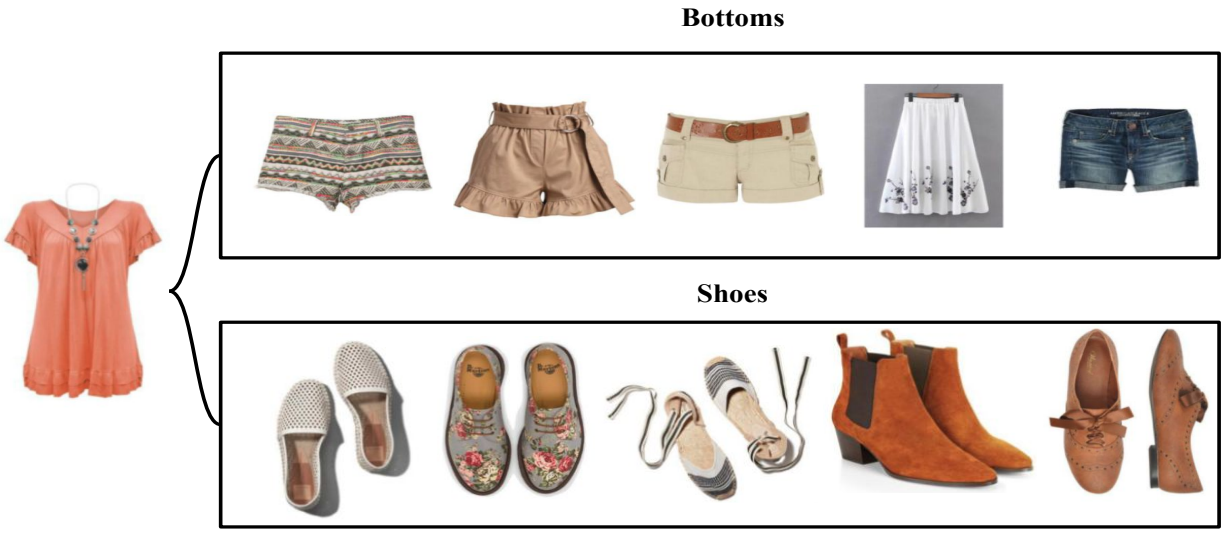

Figure 1: The query item is a top and the items contained in the boxes are the top 5 most compatible bottoms and shoes.

Figure 2: The query item is a bottom and the items contained in the boxes are the top 5 most compatible tops and shoes.

Figure 3: The query item is a shoe and the items contained in the boxes are the top 5 most compatible bottoms and tops.

Figure 4: The query item is a bag and the items contained in the boxes are the top 5 most compatible sunglasses and tops.

Figure 5: The query item is a pair of sunglasses and the items contained in the boxes are the top 5 most compatible bags and tops.

Figure 6: The query item is a bottom and the items contained in the boxes are the top 5 most compatible sunglasses and bags.

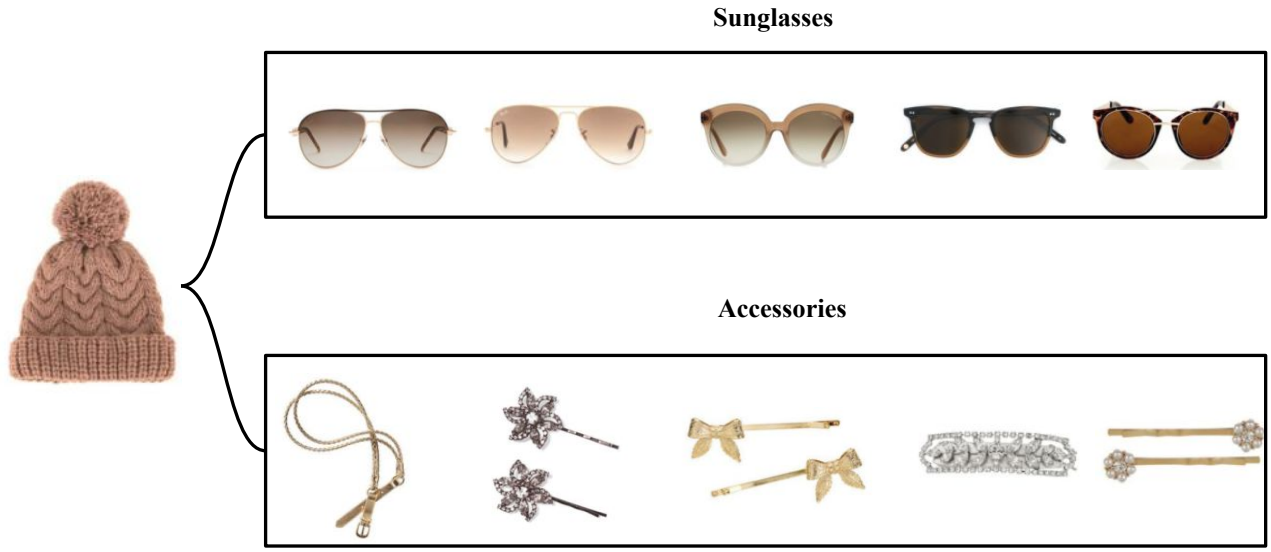

Figure 7: The query item is a hat and the items contained in the boxes are the top 5 most compatible sunglasses and earrings.

Figure 8: The query item is an accessory and the items contained in the boxes are the top 5 most compatible sunglasses and hats.

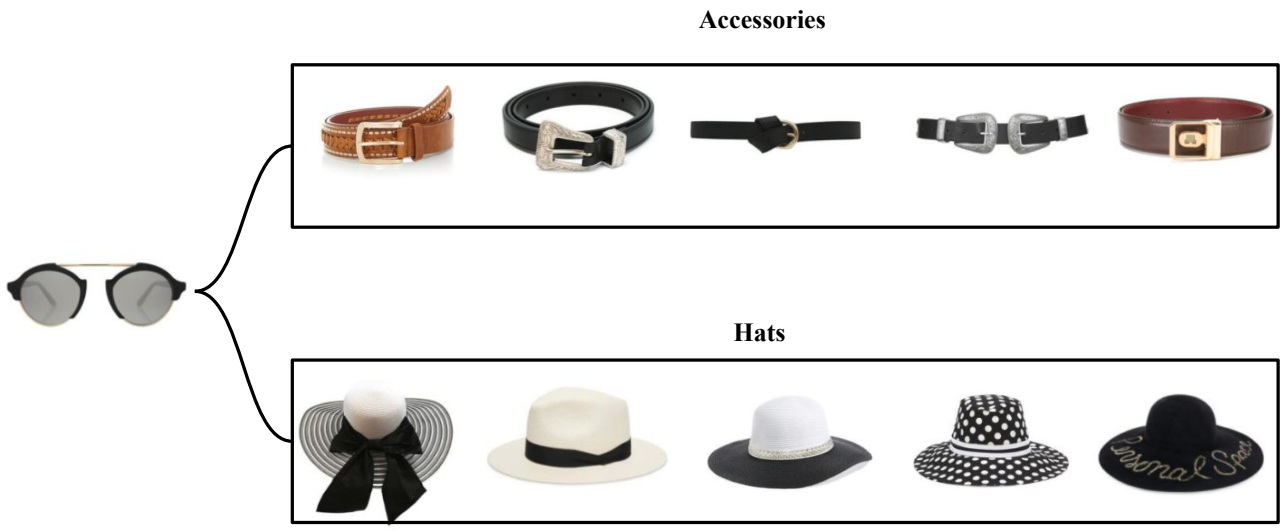

Figure 9: The query item is a pair of sunglasses and the items contained in the boxes are the top 5 most compatible belts and hats.

References

[1] M. I. Vasileva, B. A. Plummer, K. Dusad, S. Rajpal, R. Kumar, and D. Forsyth. Learning type-aware embeddings for fashion compatibility. In *Proceedings of the European Conference on Computer Vision (ECCV)*, pages 390–405, 2018.