

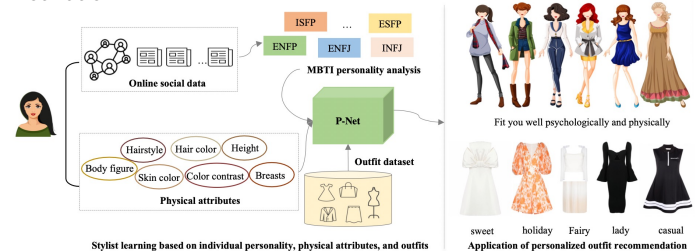
Personalized Fashion Recommendation via Deep Personality Learning

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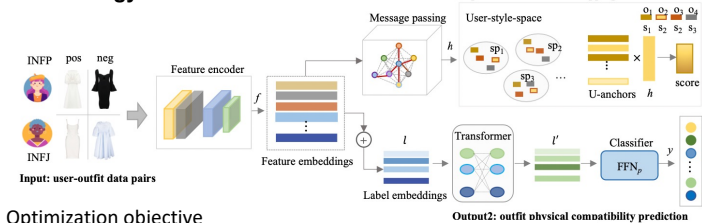
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Motivation



Methodology



Optimization objective

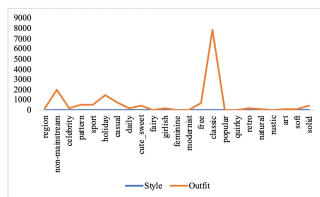
$$\mathcal{L} = \mathcal{L}_{u,h} + \mathcal{L}_{u,v} + \mathcal{L}_{u,m} + \mathcal{L}_{mk} + \gamma D_{id} + \lambda \mathcal{L}_p, \quad (4) \quad \mathcal{L}_{mk} = \frac{\sum_{s=1}^S ||m_s||}{S}$$

$$(1) \mathcal{L}_{u,h} = \sum_{(i,j,k) \in \mathcal{H}} \log(1 + \exp(-(s_{ij}^{u,h} - s_{ik}^{u,h}))), \quad (5) \quad \mathcal{L}_{u,m} = \sum_{(i,j,k) \in \mathcal{H}} \log(1 + \exp(-(s_{ij}^{u,m} - s_{ik}^{u,m}))).$$

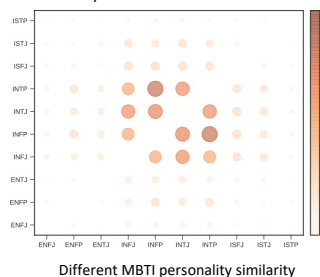
$$(2) \mathcal{L}_{u,v} = \sum_{(i,j,k) \in \mathcal{H}} \log(1 + \exp(-(s_{ij}^{u,v} - s_{ik}^{u,v}))), \quad (6) \quad \mathcal{L}_p = \sum_{i=1}^N \mathcal{E}_{p(y_k)} \{BCE(y'_i, y_i) | y_k\},$$

1. user-feat emb
2. user-style feat emb
3. user anchor reg
4. style mask reg
5. user-style mask
6. physical label prep

Experiments



Outfit style distribution on O4U dataset



Different MBTI personality similarity

User:	Outfit 1	Outfit 2	Outfit 3	Outfit 4	Outfit 5
User1: INFP					
Similarity	[0.9445, 0.7399]	[0.9677, 0.7166]	[0.9906, 0.6539]		
User2: INFJ					
Similarity	[0.6330, 0.6515]	[0.9824, 0.8234]	[0.9746, 0.2103]		

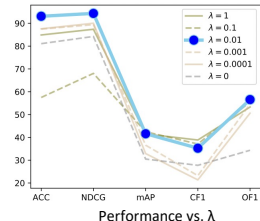
For user: Recommendation on testing/train sets

Data	Train	Val	Test	Training	Testing100	Testing
Positive	112,582	15,731	32,701	161,014	79,412	151,911
Negative	112,582	15,731	32,701	161,014	79,412	151,911

user-outfit pairs on SOP dataset

Method	Testing100						Testing						
	mAP	CP	CR	CF1	OP	OR	mAP	CP	CR	CF1	OP	OR	OF1
Resnet18	31.39	12.12	20.00	15.09	58.63	38.59	31.40	12.44	20.00	15.34	59.01	38.79	46.81
CSN	36.94	34.22	29.66	31.78	57.60	51.45	54.35	37.76	39.04	30.95	34.53	57.86	48.82
T-Aware	32.42	17.62	26.45	21.15	55.79	48.92	52.13	38.45	33.75	25.66	29.16	65.18	46.70
SCE-Net	39.61	37.13	26.88	31.18	61.98	45.99	52.80	39.36	37.42	26.89	31.29	62.03	46.26
MCN	34.58	33.37	22.64	26.98	61.31	41.67	49.62	34.51	35.02	22.55	27.43	61.34	41.74
TDRG	35.29	21.39	26.17	23.54	60.71	47.75	53.45	31.78	16.90	20.08	18.35	59.13	38.91
LAPE	30.53	14.94	20.09	17.14	58.70	38.74	46.67	30.55	15.03	20.10	17.20	59.02	38.95
Ours	41.81	39.09	32.05	35.22	63.85	50.54	56.42	41.60	39.11	35.26	63.71	50.86	56.57

physical compatibility prediction results



Method	Testing100		Testing	
	ACC	NDCG	ACC	NDCG
Resnet18	0.8360	0.8357	0.8432	0.8430
CSN	0.6175	0.5660	0.6047	0.5532
T-Aware	0.6763	0.5614	0.6820	0.5826
SCE-Net	0.5389	0.5809	0.5383	0.5826
MCN	0.5197	0.6085	0.5184	0.6128
TDRG	0.5157	0.6110	0.5361	0.6069
LAPE	0.6348	0.7425	0.6395	0.7464
Ours	0.9242	0.9380	0.9309	0.9434

User-outfit mapping results

Outfits	Emb	Raw
1	0.9889	0.7155
2	0.9669	0.5907
3	0.9880	0.5868
4	0.9895	0.5230
5	0.9794	0.5126

For personality: recommendation on testing/train sets

Outfits	Emb	Raw
1	0.9889	0.7262
2	0.9840	0.6702
3	0.9897	0.6702
4	0.9603	0.8404
5	0.9893	0.6723

For personality: recommendation on testing/train sets