**Dual-encoder Transformer for job recommendation**

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## Transformers and BERT

[202111]BERT 论文逐段精读【论文精读】{李沐}

[202206]李沐的深度学习课 BERT

## Recommendation Systems

### hybrid recommender systems

deep learning for hybrid recommender systems

[2017](45)A Hybrid Collaborative Filtering Model with Deep Structure for Recommender Systems{携程}

[2016](12)Collaborative filtering and deep learning based hybrid recommendation for cold start problem

[2016](22)Collaborative deep ranking-- a hybrid pair-wise recommendation algorithm with implicit feedback

[2017](7)Tag-aware personalized recommendation using a hybrid deep model

[2016](31)Comparative Deep Learning of Hybrid Representations for Image Recommendations

### Content-based recommendation

[领域特征]文本(Text), NLP

[2021](27)UNBERT - User-News Matching BERT for News Recommendation[重要]

[2018](683)DKN - Deep Knowledge-Aware Network for News Recommendation[重要]{DKN, Microsoft}

[2021](18)U-BERT - Pre-training User Representations for Improved Recommendation

### News Recommendation

[领域特征]文本(Text), NLP

### Multi-Interest Matching in Recommendation Systems

[Topic]推荐系统多兴趣召回(Multi-Interest Matching in Recommendation Systems)

### Sequential Recommendation

[特征学习]Sequential Recommendation

[特征学习]Session-based Recommendation

### 推荐系统负样本采样

#CTR预估中的训练数据负采样策略&正负样本构造

## Neural Information Retrieval

多多参考dual encoder的IR模型(user click seq as Query, job text as Doc)

[IR类型][Text.Information.Retrieval]

### Dual-encoder architecture

## Mixing Retrieval with Recommendation

[IR类型]Joint search and recommendations

## Contrastive Learning

2[自监督][判别式自监督][Contrastive Learning (对比学习) & Metric Learning (度量学习)]

[Text.Retrieval]Contrastive.Learning.methods

[RS学习范式][对比学习(Contrastive.Learning)]

## Multi-modal Learning

[AI][ML算法][Learning.Paradigms][Transfer.learning][Multimodal Machine Learning(多模态机器学习)]

## multi-modal feature alignment: relational UID and content UID

[2017](184)Cross-Domain Recommendation - An Embedding and Mapping Approach[重要]

[2022](1)Modality Matches Modality - Pretraining Modality-Disentangled Item Representations for Recommendation

[2022]Disentangled Multimodal Representation Learning for Recommendation

#Modality invariance loss,modality invariant features, Modality Gap, 多模态特征对齐

## My Job Recommendation Model

Aaaa

## Future Work

Ablation studies

#[Ablation studies]What is Ablation Study in machine learning

\* \*\*Negative samples for view prediction.\*\*

Sampling strategies

\* \*\*Negative samples for application prediction.\*\*

\_Jobs clicked but not applied\_ may or may not be used as the negative samples

of application behaviour prediction. Note that for application behaviour prediction the

`content` column should also be used.

\* \*\*Learning to rank losses.\*\*

Also requires negative samples. Pairwise ranking approaches such as [BPR](https://medium.com/@andresespinosapc/learning-to-rank-bpr-5fe5561d48e0).

When creating positive and negative item pairs for each user, maybe \_Jobs clicked but not applied\_ can be used, as this relation is ordinal not binary.

This means more relaxed constraint than using \_Jobs clicked but not applied\_ as negative samples directly in a pointwise ranking way.

\* \*\*Multi-task learning\*\*:

Some multi-task learning approaches for CTR prediction can model CTR and CVR in one unified architecture, e.g.

[ESMM (2018)](https://arxiv.org/abs/1804.07931),

[DBMTL (2019)](https://arxiv.org/abs/1902.09154),

[NMTR (2019)](https://ieeexplore.ieee.org/document/8731537),

[PLE (2020)](https://dl.acm.org/doi/abs/10.1145/3383313.3412236).

Depending on the business objective, we may want to use CTCVR.

More: [多任务学习]Multi-Task Learning for Recommendation