



# HybridBERT4Rec: A Hybrid Recommender System Based on BERT

**Sequential Content-Based and Collaborative Filtering**

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# Traditional CBF VS Sequential CBF



Target user  
(Alice)



Figure 1: Example history for Alice in traditional CBF [1]

■ models **general** user preference

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- models **general** user preference
- **BUT:** User preferences change over time! [2]

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- models **general** user preference
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Target user  
(Alice)



24.1.23



26.1.23



28.01.23



30.01.23

Figure 2: Example history for Alice in sequential CBF [1]

- Considers the **order** of historical interactions
- Allows the modelling of “temporary spikes” of interests, as well as the general preferences [2]

# A Common Approach to Sequential modelling

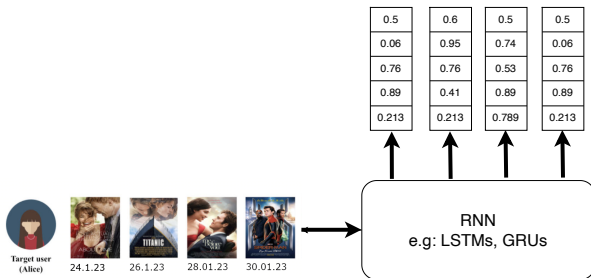


Figure 3: Sequential Content Recommendation with RNNs

- Suffers from common RNN problems! Especially: **Catastrophic forgetting**, uni-directionality

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**Applicability to E-Learning**  
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References

# References

- [1] Chanapa Channarong et al. “HybridBERT4Rec: A Hybrid (Content-Based Filtering and Collaborative Filtering) Recommender System Based on BERT”. In: *IEEE Access* 10 (2022), pp. 56193–56206. ISSN: 2169-3536. DOI: 10.1109/ACCESS.2022.3177610. (Visited on 11/02/2023).
- [2] Shoujin Wang et al. “Sequential Recommender Systems: Challenges, Progress and Prospects”. In: (2019), pp. 6332–6338. (Visited on 11/02/2023).