Self-Supervised Bot Play for Transcript-Free Conversational Recommendation with Rationales

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Conversational Recommendation

Bot: I'm looking for a fantasy book

User: You might like Malice. It's a slow fairy tale with twists.

Bot: I don't really like fairy tales.

User: How about The One and Future Witches? It's a clever book with magic and politics.

Bot: That sounds great, thanks!

Success of Bot-Play for Conversational Recommendation

➔ Out method is both more successful (higher rate of reaching goal item by session end) and more efficient (reaches the goal item faster) than SOTA baselines on all datasets

➔ Bot-play Improves multi-turn performance for 2 different model architectures and 3 different model sizes

➔ We effectively accommodate multiple simultaneous critiques

➔ Our method is rated by humans to be significantly more useful, informative, knowledgeable, and adaptive compared to baselines.

Challenges with Existing Approaches

Question Answering (e.g. Zhang 2018, Lei 2020)

Users cannot freely provide feedback

Conversational Chat-bots (e.g. Li 2018, Kang 2019)

Requires expensive crowd-sourced, in-domain dialogs

Conversational Critiquing (e.g. Wu 2019, Li 2020, Antognini 2021)

Room for improvement in multi-step critiquing performance

Bot-Play Fine-Tuning

System (re-)scores candidate items based on user preference embedding and generates a justification (via rationales)

Eleven Madison Park
Hangawi
McDonald's
Katz's Delicatessen

System updates user preference embedding using the critique

User accepts the suggestion

User critiques an aspect from the justification inconsistent with their target review

Real-World Review Datasets

Beer

Music

Books

Beer (McAuley 2012)

6K users, 4K items
935K reviews

“Eleven Madison Park
Hangawi
McDonald's
Katz's Delicatessen

Music (McAuley 2015, He 2016)

6K users, 4K items
119K reviews

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Hangawi
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Books (Wan 2018)

14K users, 8K items
655K reviews

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