i. Abstract

The contextual recommender was improved by changing the architecture of new recommender and the loss function for training loop (RMSE); the architecture was changed in a way that user embeddings were element-wise multiplied to the track and going through Linear layer; this result was summed up with the result of contextual recommender and finally following with Sigmoid function. Also obtained data was recommended by 50 neighbors instead of 100. The volume of the data for training was not increased.
The default recommender which goes on when there is no previous track or recommendations was changed as well: random recommender was replaced by indexed and top-pop recommender. Finally, there was written custom new_recommender.py which was compared with contextual recommender making A-B tests.

ii.Details

RecSystracks_with_recs.json is in bootify/data/ directory and this file is the result of training of new Neural_net (changed contextual recommender). This file contains 50 recommendations for each track.

new_recommender.py in bootify/recommenders/ directory is custom recommender script which is used in the class NextTrack in server.py.

“TRACKS_CATALOG_NN” was added to config.json file pointing on RecSystracks_with_recs.json. There were written two catalogs in server.py, first contains tracks_with_recs.json for contextual recommender, the second one contains RecSystracks_with_recs.json for new_recommender. New_acrhitecture of recommendation system realized in notebook bootify/jupyter/New_NN_architecture.ipynb

iii.Results of A/B-experiment.

All the metrics except sessions were improved. Main target metric mean_time_per_session was improved in statistically significant difference.

	treatment	metric	effect	upper	lower	control_mean	treatment_mean	significant
0	T1	time	10.434669	22.324438	-1.455100	6.027589	6.656548	False
1	T1	sessions	-3.470638	-0.686002	-6.255275	1.131324	1.092060	True
3	T1	mean_tracks_per_session	7.254518	13.237622	1.271415	10.301041	11.048331	True
4	T1	mean_time_per_session	12.668193	23.973420	1.362966	5.338687	6.015002	True
2	T1	mean_request_latency	3.117109	5.316282	0.917937	0.620021	0.639347	True