

RECOMMENDER SYSTEMS

2020 CHALLENGE - APPROACH & RESULTS



OUR **BEST** MODEL

Item CF

Private: 0.09957 (30 Nov)

- Normalization using **similaripy** [<https://github.com/bogliosimone/similaripy>]
- Horizontal **Stack** (URM + ICM, both normalized)
- Distance Matrix using **RP3Beta** similarity
- MaurizioFD's **Bayesian Optimizator**
- Public: 0.09256 - Private: 0.09957 (30 Nov)

OUR BEST MODEL

Item CF

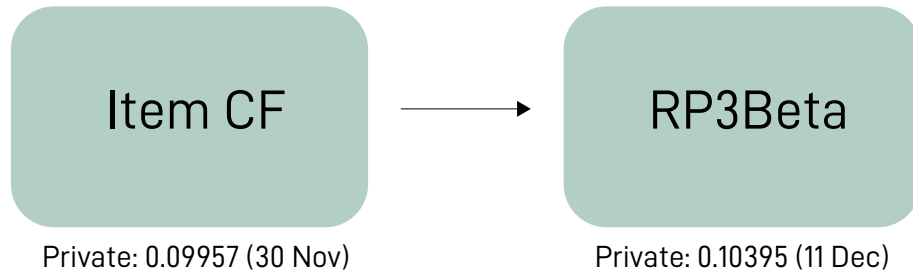
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How to improve?

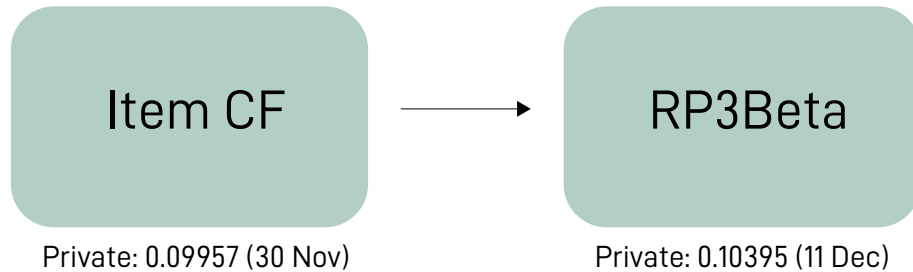
- Division of users based on number of ratings
- Hybrid model

OUR BEST MODEL



- Normalization of **ICM only** (bm25plus)
- Vertical **Stack**
- **Different parameters** for different user profiles [(<7) , $(8-19)$, (>20)]
- **Linear combination** hybrid (using **skopt**)
- Public: 0.09747 - Private: 0.10395 (11 Dec)

OUR **BEST** MODEL



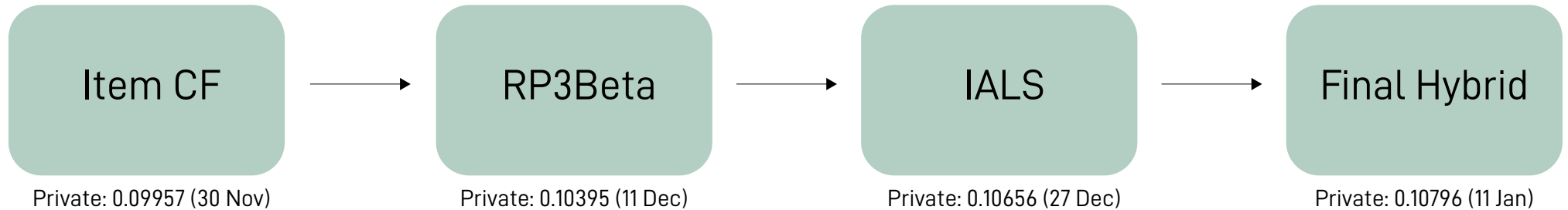
- Normalization of **ICM only** (bm25plus)
 - Vertical **Stack**
 - **Different parameters** for different user profiles [(<7) , $(8-19)$, (>20)]
 - **Linear combination** hybrid (using **skopt**)
- Public: 0.09747 - Private: 0.10395 (11 Dec) —————> 2nd position in both public and private



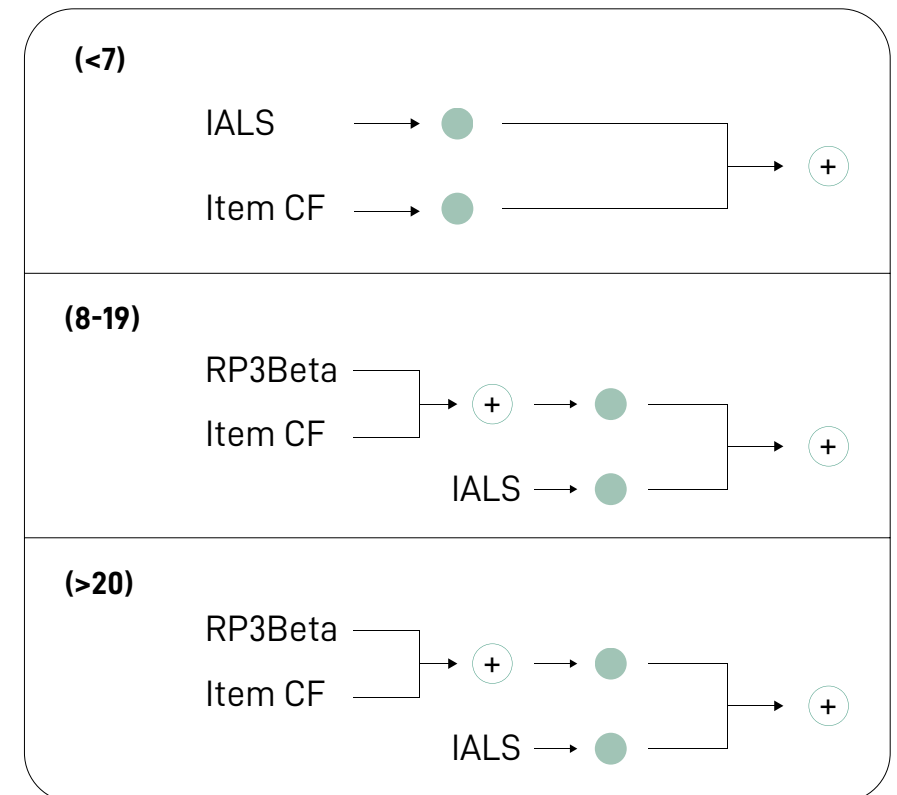
OUR BEST MODEL



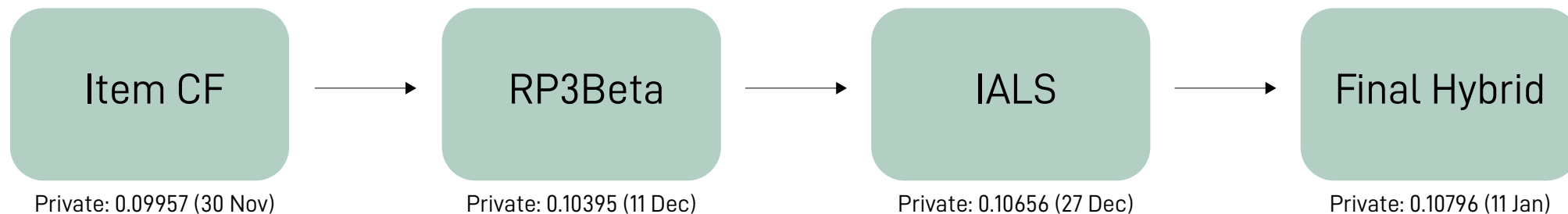
- **Implicit** library can be used! [<https://github.com/benfred/implicit>]
- Normalization of ICM and vertical stack
- Faster implementation → Parameters **optimization**, more iterations of IALS
- Public: 0.09963 - Private: 0.10656 (27 Dec)












- Added **another IALS** model with a different input
- Normalization done **only after** the vertical stack!
- Optimization of **models and weights** w.r.t. users profiles
- Public: 0.10103 - Private: 0.10796 (11 Jan)



OUR BEST MODEL



#	Team Name	Notebook	Team Members	Score ?	Entries	Last
1	10688116_10649873		 	0.10103	89	7d
Your Best Entry 						
Your submission scored 0.09823, which is not an improvement of your best score. Keep trying!						
2	10536563			0.10030	22	1mo

#	Δpub	Team Name	Notebook	Team Members	Score ?	Entries	Last
1	▲ 1	10536563			0.10897	22	1mo
2	▲ 4	10584419			0.10803	62	7d
3	▼ 2	10688116_10649873		 	0.10796	89	7d
4	▲ 5	10601322			0.10794	70	13d



WHAT DIDN'T WORK

- Building an UCM using URM and ICM
- SLIM (BPR and ElasticNet), Spotlight, SVD (maybe not bad, but not improving ItemCF)
- Combining too many models' scores
- List merging (we tried Round Robin and BordaRank) [<https://ieeexplore.ieee.org/document/7550761>]
- Using Top Popular recommendations for specific users
- Giving too large intervals and/or too many parameters to the optimizer

THANK YOU
FOR YOUR ATTENTION!