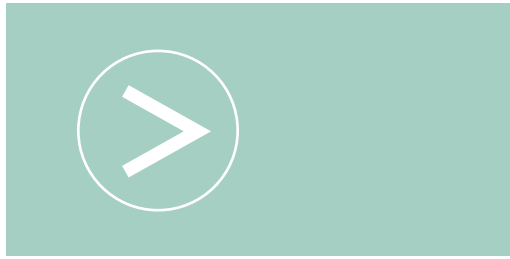
POLITECNICO
MILANO 1863

RECOMMENDER SYSTEMS

2020 CHALLENGE - APPROACH & RESULTS



Meta Samuele • Metaj Stiven

OUR BEST MODEL

Item CF

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Item CF

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

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Private: 0.09957 (30 Nov)

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How to improve?

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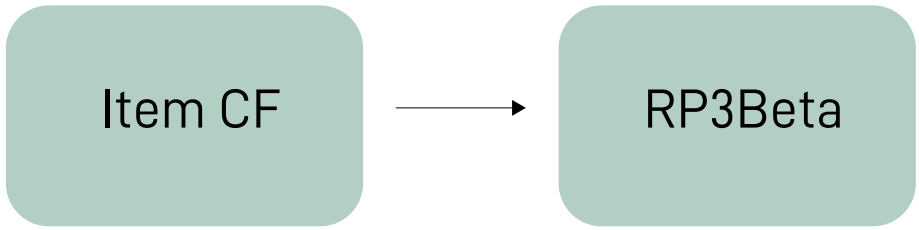
How to improve?

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

OUR BEST MODEL



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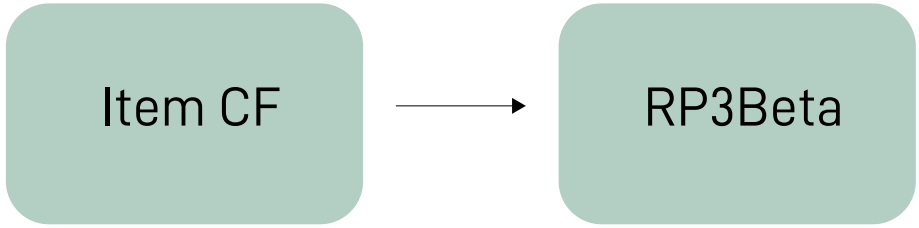

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- Normalization of **ICM only** (bm25plus)
- Vertical **Stack**
- **Different parameters** for different user profiles [(<7), (8-19), (>20)]
- **Linear combination** hybrid (using **skopt**)

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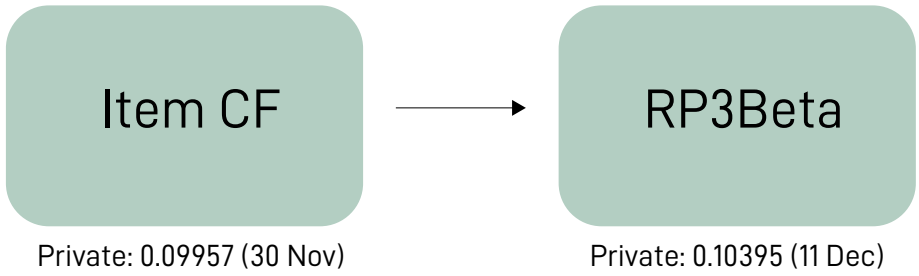

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OUR BEST MODEL

Item CF → RP3Beta

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- Public: 0.09747 - Private: 0.10395 (11 Dec) → 2nd position in both public and private

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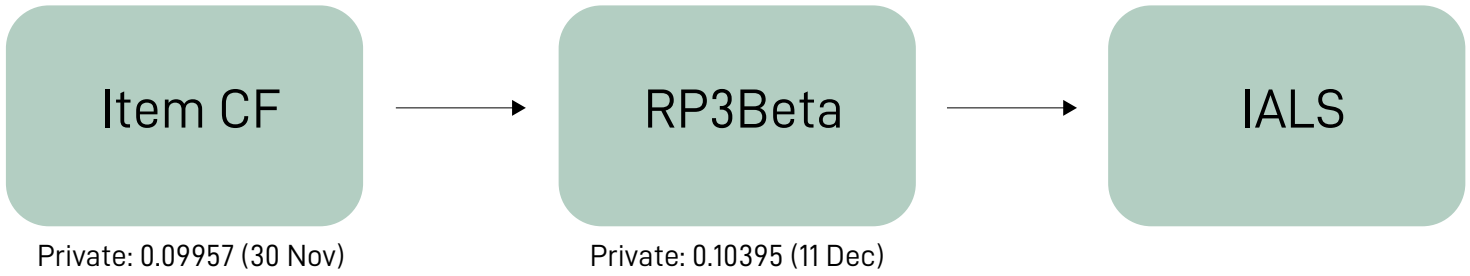

- **Implicit** library can be used! *[https://github.com/benfred/implicit]*
- Normalization of ICM and vertical stack
- Faster implementation ⟶ Parameters **optimization**, more iterations of IALS

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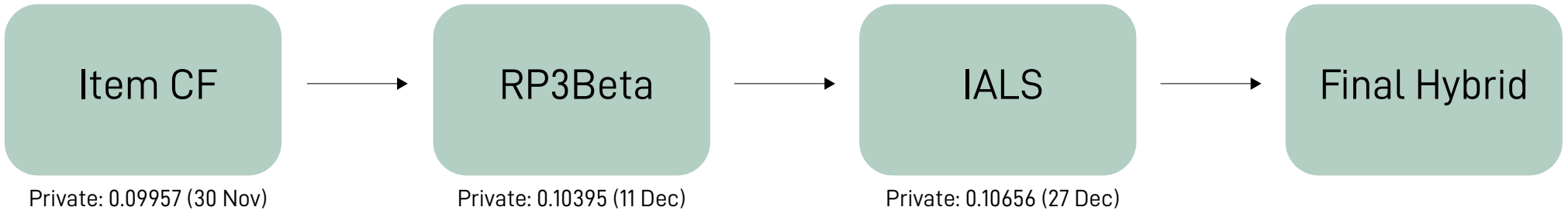

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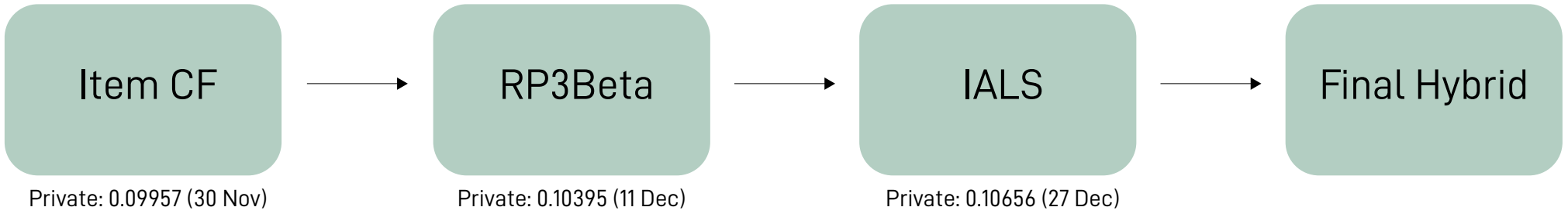

- Added **another IALS** model with a different input
- Normalization done **only after** the vertical stack!
- Optimization of **models and weights** w.r.t. users profiles

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Item CF → RP3Beta → IALS → Final Hybrid

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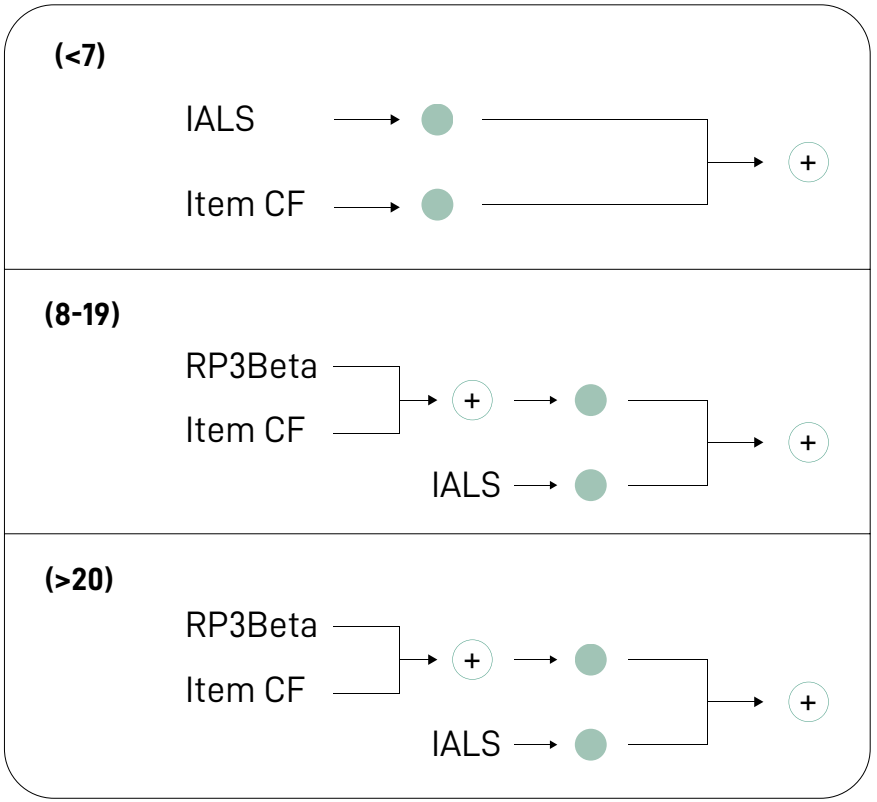

OUR BEST MODEL

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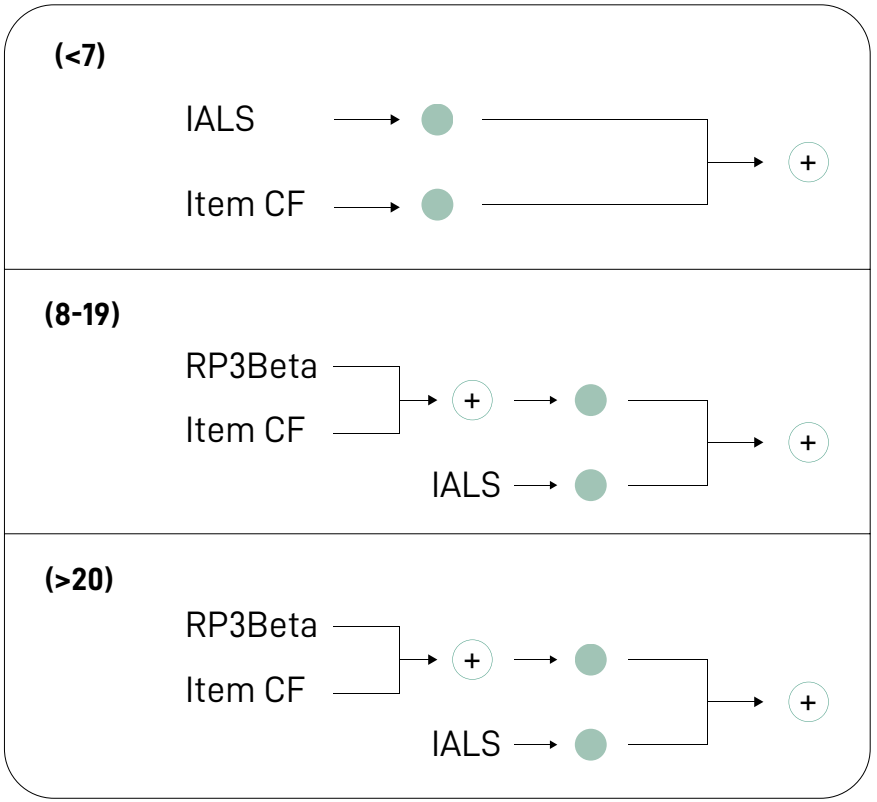
- Public: 0.10103 - Private: 0.10796 (11 Jan)



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#	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
3	10495606_10746971			0.09984	82	8d

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#	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 optimizator

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THANK YOU

FOR YOUR ATTENTION!

Meta Samuele • Metaj Stiven