

Addressing Popularity Bias in Citizen Science



Amit Sultan, Avi Segal, Guy Shani, Kobi Gal





Recommendations Systems



Recommender systems can help with:

- ❑ getting personalized recommendations.
- ❑ Increase overall sales.
- ❑ Improve user experience.





Popularity Bias

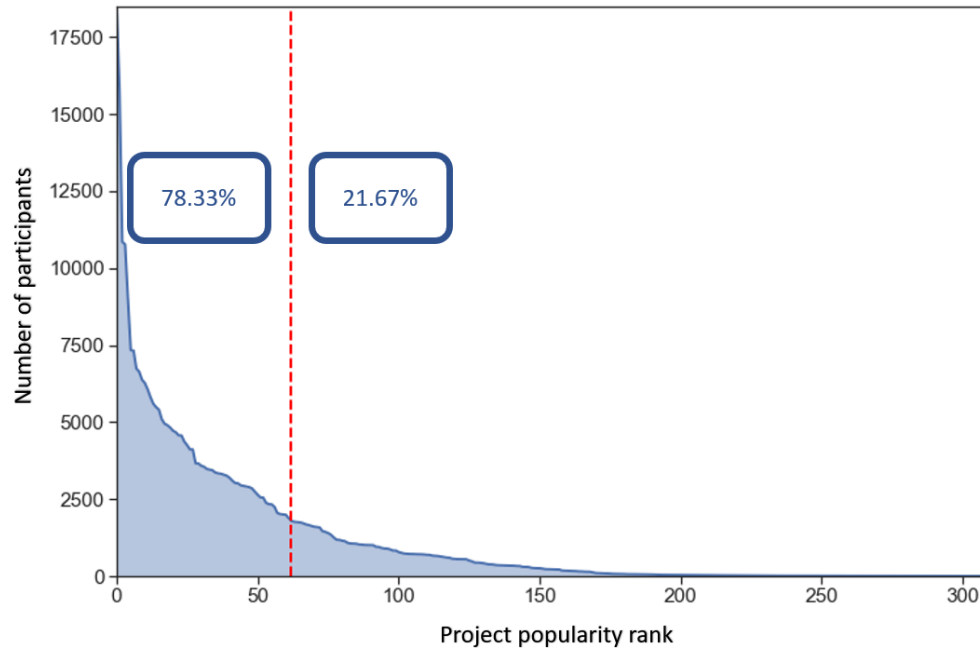
popularity bias is a phenomenon of recommendation systems.

Side effects of this phenomenon are:

- ❑ Lack of personalization.
- ❑ Lack of diversity.
- ❑ Starvation of non popular items.

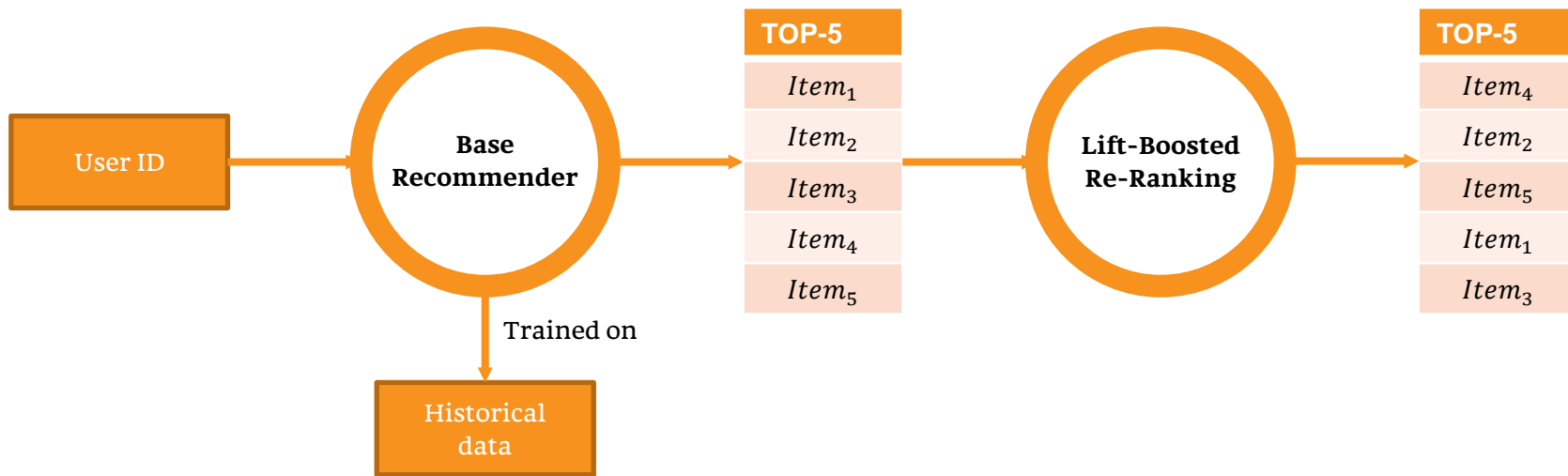


Popularity Bias at Citizen Science





Re-Ranking architecture





Hypothesis

- ❑ Projects with higher lift value for a user are stronger recommendations for the user.
- ❑ Controlling project popularity.



Data-Sets

1/1/2021-1/12/2021	Zooniverse	Scistarter
Number of users	170,411	13,858
Number of projects	311	84
Number of participations	366,413	16,964



Real recommendations

Popularity	BPR Recommendations	Popularity	Lift-Boosted BPR Recommendations
H	Disk Detective	T	Protect Our Planet From Solar Storms
H	Radio Galaxy Zoo: LOFAR	T	Milkey Way Project
H	Citizen ASAS-SN	T	Exoplanet Explorers
H	Bursts from space	T	Catalina Outer Solar System Survey
H	SuperWASP Variable Stars	H	Disk Detective
H	Radio Meteor Zoo	H	Radio Meteor Zoo
H	Galaxy Zoo Mobile	H	Radio Galaxy Zoo: LOFAR
H	Active Asteroids	T	Astronomy Rewind
H	Planet Four: Terrains	H	Bursts from space
T	Zwicky Chemical Factory	T	Zwicky's Quirky Transients

*H – head items

*T – tail items



Thanks!

Any questions ?

You can find me at

📧 amitsul@post.bgu.ac.il