ReCommendation Systems meet PIR
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Recommendation Systems
Allows business to increases their sales.
User information collected, which could potentially be misused, stolen, sold.

Our Goal
Our goal is to build a recommendation system, that:
1. Provides relevant recommendations to the users.
2. Is completely oblivious to users’ consumption patterns.

Collaborative Filtering

Distributed Point Functions
We show how to use the DPFs to realize two-party fixed-selection-wire multiplexers and demultiplexers, which serve as extremely fast and non-interactive drop-in replacements for what would otherwise be the two most expensive steps in MPC-based gradient descent.

References
[1] Syed Mahbub Hafiz and Ryan Henry. A bit more than a bit is more than a bit better: Improved constructions for faster optimal-rate multiserver PIR.

Assumptions
- We use the recent Hafiz-Henry PIR protocol which is computationally optimum and has an optimal download cost.
- Its upload is made extremely low by using DPFs to encode the queries.
- The price that is paid: The protocol requires that no two servers collude.

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