Collaborative recommendation engine
VTT Technical Research Centre of Finland Ltd

Introduction / background
UPCV (Ubiquitous Personal Context Vectors) is a novel collaborative recommendation method that solves scalability and sparse data problems associated to the traditional matrix factorization approaches. UPCV is based on token exchange.

Unlike other collaborative recommendation services UPCV stores item and user data separately. That’s unique; item data can be synchronized, while respecting user privacy. This enables accurate cross service recommendations.

Key benefits:
- User data from several sources can be integrated
- No domain specific information is required
- User identity is protected by deidentification
- The system is scalable by cloud computing
- Different services can be synchronized

Large scale reference implementation
HelMet network (Helsinki Metropolitan Area Libraries) has implemented UPCV based book recommendation service that gives personal book recommendations based on loan data.

There are 3.4 million items and more than a million customers in the metropolitan area library network.

Results
The amount of book reservations and usage of book collection has risen through efficient recommendation service in HelMet libraries.

The UPCV allows synchronising different recommendation engines providing relevant recommendations without cold start problems.

Summary
UPCV is a novel collaborative recommendation method preserving users’ privacy and supporting distributed computing and distributed data repositories.

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