PrivateRecSys

D2. Searx Integration

3rd September, 2022

Introduction

This deliverable presents the architecture of the PrivateRecsys and Searx System integration.

The integration of Privacy Recsys is achieved by introducing a **"login"** to privacy recsys from the Searx Interface, filtering the results received by the engines and adding a new category on searx, to make available the results of the Integration.

In the future, when all items are used for recommendations, and all results will be filtered by PrivateRecsys before they are presented to the user, this category will not be needed.

This guide can be useful to anyone interested in extending the PrivateRecSys project or building other integrations for the Searx system.

RecSys Searx System Architecture

System Diagram

The following diagram demonstrates the system architecture of the Integrated PrivateRecys -Searx System.
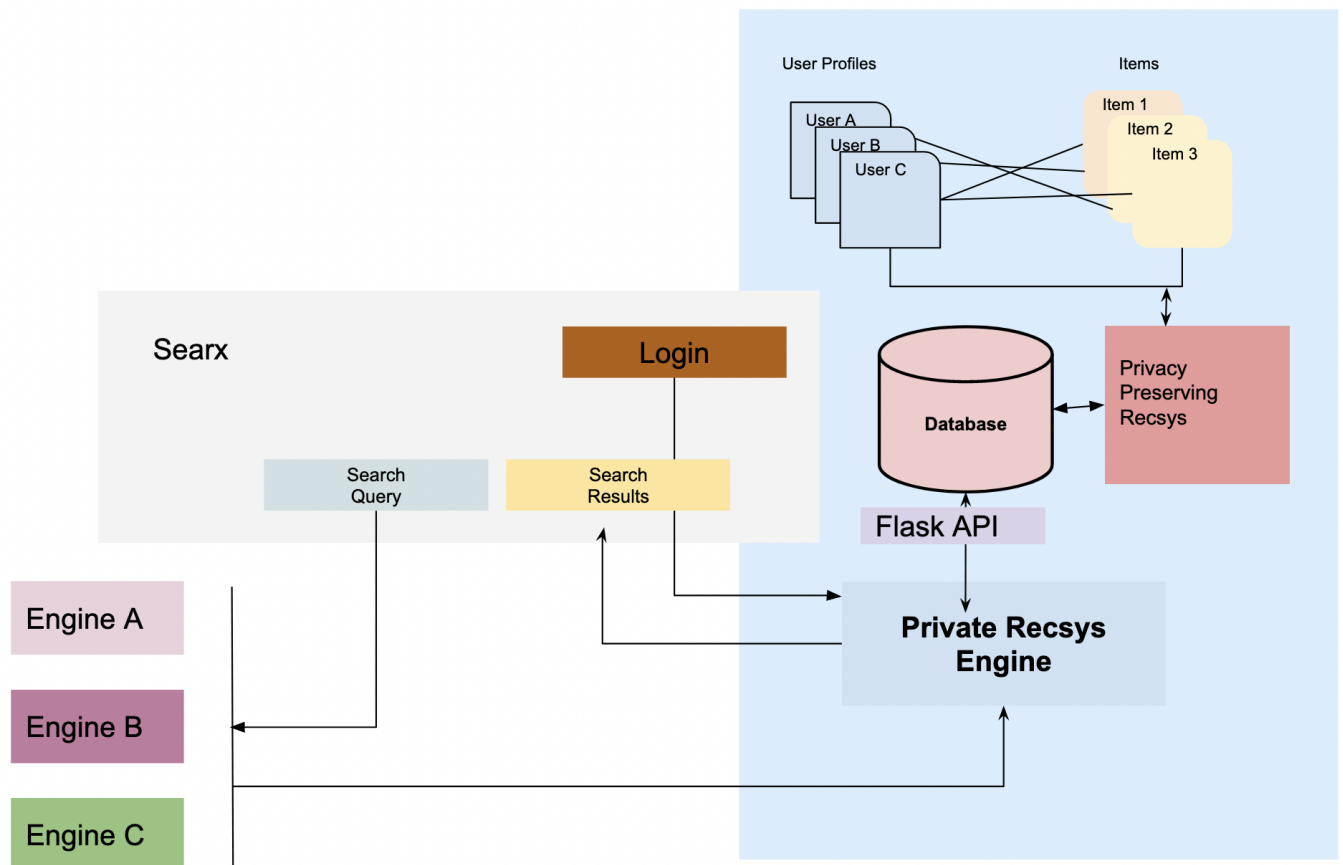
The Private Recsys system, demonstrated above includes the Private Recsys Engine, an API that communicates with the database and the Privacy Preserving Recsys library. The components presented are discussed below.

1. Privacy Preserving Recsys Library

Access to the raw user profiles and items is only available through the privacy **Privacy Preserving Recsys library** which guarantees the differential privacy of the users. Itcludes algorithms for producing privacy preserving recommendations.

2. Flask API

The system includes an API (implement)ed via Flask) that enables the registration of new users, rating items, running recommendations using the Privacy Preserving Recsys Library and serving the recommendations to the users.

3. The Database

The databases stores all the data before they are served to the users, including recommendations, privacy preserving averages of top items and the similarity between users to produce privacy preserving recommendations.

4. The Login

 Login is implemented on Search to assist in the integration of the PrivateRecsys into Rec, and various UIs must be implemented to present the information. Using the Login, the user is matched with a user profile and this allows access to its profile and produced recommendations.
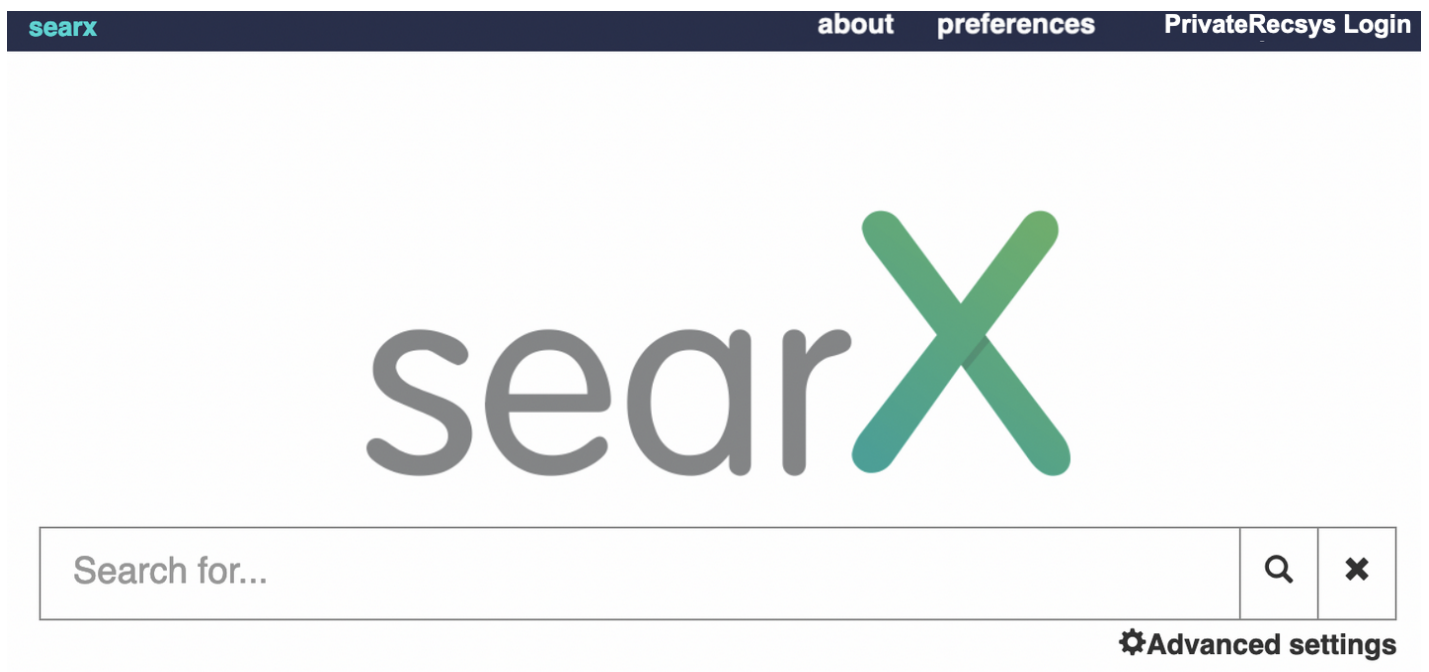
5. Privacy Recsys Engine

 For producing effective recommendations integrated into the Searx, a "Privacy Recsys Engine" is used to filter the results from the search **engines** before they are presented to the users. This allows the user to receive personalized yet privacy preserving recommendations.

User Interface Prototype Design

Login:

In order to receive privacy preserving filtering and recommendations, the user shall be able to **login** to the PrivateRecsys from the Seax system.

A button on the top right of the screen, will guide the user to login, and redirect to the user profile.

By clicking on the **profile** button the user must be able to see what items. (previously rated items or items the user has interacted with) are considered for these recommendations. The user must be able to remove items from the user profile and from being used for recommendation. In this way, the user has control over what data are stored.

Log in

Not registered yet? Sign up

User name*

Password*

Log In

Forgot password?

---

searx   about   preferences   Profile

User Profile: **userA**

Items Considered

Item A   ✖

Item B   ✖

Item C   ✖

For accessing the recommended items , a new card shall be presented to the user in the menu.

 In the future, the system can be further expanded so all items are considered and all categories are filtered / ranked by the private recsys .

Conclusion

In this deliverable the system architecture of the integrated PrivateRecsys - Searx system is presented.

This document will be updated after the development of the system, to include the components analysis as well as a sequence diagram. This will provide a better understanding of how the system works and how one can extend and modify it.