Case Study 8: Privacy Preserving Recommendations System

mirafra
TECHNOLOGIES

Business Challenge

To develop a Federated learning based platform and privacy preserving recommendation system for Wellness App
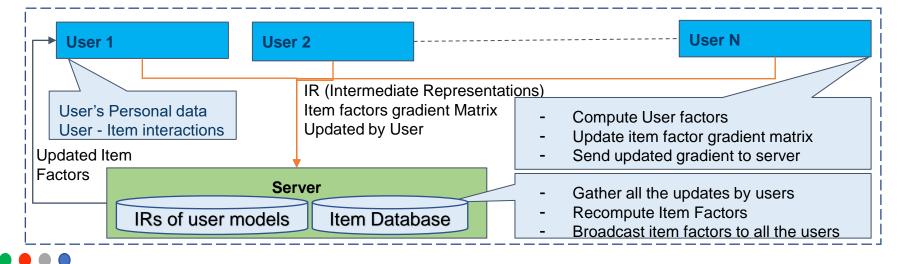
Requirement

- Develop a Federated Learning based platform and federated learning based algorithms for recommendation system
- Generate recommendations on Edge devices

Technology & Tools

- Python, Pandas, NumPy, SciPy
- TensorFlow
- SQL, MySQL, SQL-Alchemy,
- Flask, Rest API
- AWS, Docker

Value add by Mirafra

- Developed end-to-end platform for federated learning
- Develop federated learning based algorithms for recommendations
- Develop simulator to simulate training recommendation model for 50000 users
- Develop end-to-end demo for federated learning based recommendations

User 1

User 2

User N

User's Personal data
User - Item interactions

IR (Intermediate Representations)
Item factors gradient Matrix
Updated by User

- Compute User factors
- Update item factor gradient matrix
- Send updated gradient to server

Updated Item Factors

Server

IRs of user models

Item Database

- Gather all the updates by users
- Recompute Item Factors
- Broadcast item factors to all the users