Success Story
COMET

Know-Center | Know-Center GmbH – Research Center for Data-Driven Business & Big Data Analytics
Programme: COMET – Competence Centers for Excellent Technologies
Programme line: K1-Centres
COMET subproject, duration and type of project:
SC-01: Marketplace Analysis and Customer Relationship Management, 01/2015 – 12/2016, multi-firm

ScaR - Scalable recommender framework

Within joint projects with the companies Mörth & Mörth and TripRebel, Know-Center developed several recommender solutions and acquired expertise to create the recommender framework ScaR (Scalable Recommender Framework). This framework is the scalable state-of-the art recommendation engine that provides "off-the-shelf" recommender services in near-production-ready quality, packed with features that many commercial systems do not have. Know-Center successfully used this framework within a project with the company Nekom and it is being applied within several other ongoing projects as well.

Gaining expertise on recommender solutions through different projects

Know-Center worked together with the companies Mörth & Mörth and TripRebel to create and develop recommender systems. The acquired expertise was the basis for the developed recommender framework.

Together with the company Mörth & Mörth, we developed a recommender system for both online and offline marketplaces. While in online marketplaces (e.g., internet shops) user interactions occur solely in a virtual environment, in offline marketplaces (e.g., shopping mall) they physically take place in a store.

The goal of the project was to recognize the various activity patterns of the user in a virtual environment (e.g., product searches, likes on a Facebook page, etc.) and physical environments (e.g., walking in the shopping mall, tarrying in front of a particular store, etc.) and to combine them. To that end, the project focused on incorporating physical environments (e.g., shopping malls) by using IPS beacon technology. This way, physical interactions can be tracked in the real world and leveraged for creating recommendations in the virtual one. The opposite also applies: the user's online behaviour can be mapped and used in the physical world.

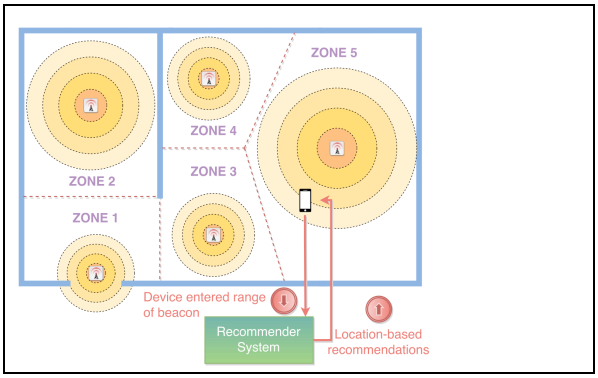

Fig. 1: Mapping a shopping mall via beacons to collect location data while users walk and visit stores in the mall. (© Know-Center GmbH)

Together with TripRebel, Know-Center enhanced the previously conventional booking process with a personalized recommender system, which helps customers to find suitable accommodations. The goal of the project was to

bmwfw Federal Ministry of Science, Research and Economy
bmvit Austrian Ministry for Transport, Innovation and Technology

develop a flexible recommender system that provided customers with a quick overview of hotel recommendations that match their personal preferences.

The developed recommender methods were evaluated, improved and expanded based on the collected information on customer interactions (e.g., actual bookings, likes and views). Customers can profit significantly by obtaining optimized search results and save money and time while looking for a hotel.

Nekom Social Recommender

Our project partner Nekom offers know-how and software development services in marketing, retail and multichannel E-commerce. They are also involved in creating an online platform for social organizations to improve the process of serving their clients' needs.

Within this project, we provide recommendations via an API that helps clients to find the right social counsellors and organizations for their specific problem and helps counsellors to answer the clients' questions by recommending possible answers and related resources. Feedback from a central ticket system and user interactions improve the recommendation mechanism over time and make the system learn which institutions can handle which questions.

The Know-Center used the ScaR (Scalable Recommender Framework) for the Nekom project and added extensions resulting from it, such as recommendation algorithms for user questions, to the framework for later reuse within other projects. In addition, we implemented an interface between the customer application and the recommender framework.

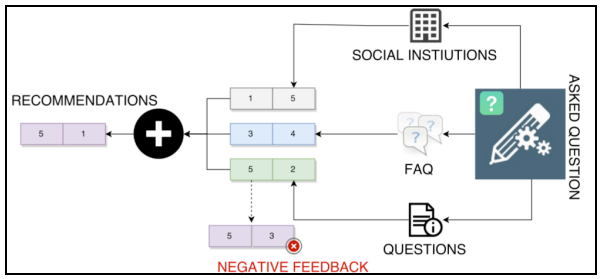

Fig. 2: The recommendations use information about the social institutions, FAQs and tickets (the questions clients asked). (© Know-Center GmbH)

Impact and effects

We began with custom recommender solutions within various projects. The acquired expertise resulted in the development of the Scalable Recommender Framework (ScaR). Within the latest project (the Nekom Social Recommender) the framework was enhanced to provide recommendation services to customers without adapting the framework.

We only have to customize and extend the framework for new projects and customers to obtain a scalable state-of-the art recommendation engine that provides near-real-time recommendations, allows runtime configuration, contains the newest algorithms and includes an evaluation and A/B testing framework.

The Know-Center can now provide recommender systems "off the shelf" in a "near production ready" quality packed with features that many commercial systems do not have. ScaR is a success story that developed within the last two years. There is much interest in further projects with this technology, and several ongoing projects use it already.

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TripRebel GmbH	Germany
BLANC-NOIR GmbH (now: Mörth & Mörth GmbH)	Austria