Application of graph databases in e-commerce system

motivation

"*Different databases are designed to solve different problems. Using a single database engine for all of the requirements usually leads to non- performant solutions.* "

— Pramod J. Sadalage, NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence

- NoSQL is a hot topic nowadays
- No general (relation) database for all purposes anymore
- Many kinds of different databases, data schemas
- and approaches to the data

> In my master thesis I set a goal to define one typical problem for e-commerce system, find a good solution and implement it using suitable NoSQL database.

problem

Automated recommending relevant products to the visitor of e-commerce site.

solution

Monitor user behavior and interactions, store these information in a graph structure and after that use it for personified recommendations. Track statistics about quality of recommendation strategies and adapt them to increase conversions.

chosen database

According to the specified requirements it OrientDB database was chosen for the implementation. Other considered graph databases were Neo4j and Titan.

results & outcomes

Successful Implementation of recommendation system for internet shops with different recommendation strategies using content and collaborative methods. Recommendations are personalized for individual visitors. Due to the appropriate data schema strategies can be easily adapted.

System was integrated into existing e-commerce. Steps for integration are also part of the thesis.

Quality and efficiency of the recommendation system is measured using A/B testing method. Statistics from the system are displayed in Google Analytics tool.

As a secondary outcome of the thesis was implemented library for mapping Java plain objects onto OrientDB data structure and backwards using annotations. Library also support basic CRUD operations.

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