Recommender Systems in Health Care

Abstract

As described in the presentation of SAP, Machine Learning is eating the World. We reached a point, where we have the computational power and storage to save and analyze huge data sets to find patterns and solve tasks that where reserved for humans before. Another interesting application case of machine learning are recommender systems, that give recommendations based on the data the user produces. There are multiple systems that are already using recommendations like Netflix, Spotify or Xing. A next step could be to create a recommender system to improve the health system.

Recommended Treatments

Hospitals are collecting a lot of data every day, but to recommend a treatment the personal data is as important as the data of similar patients. As a first application, recommender systems could be used in hospitals to support the doctors within their decisions. In a distant future, we could think about systems that help the user directly if she/he a disease. This would make doctors in a many cases unnecessary and could help to give them back the focus on complex and new diseases.

Normal Treatment

- No support for doctors

Supporting doctors

- Treatment recommendations
- Based on data from similar patients

Self-Support

- No need for doctors in simple cases
- Doctors can focus on difficult diseases

Data sources

Patient Data

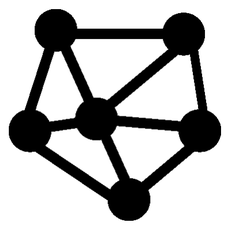
Historical Data

Similar Patients

Challenges

Data Security

Anonymization



Connect Data

Research

Data is a key point for this future vision, therefore there has to be done many research in data quality, transfer and processing.
Another critical topic would be the related aspects of ethics and security. In order for people to trust such a system, a high precision is as essential as the data security.

High precision requirements

Society Acceptance

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More information:

- Martin Wiesner and Daniel Pfeifer, Health Recommender Systems: Concepts, Requirements, Technical Basics and Challenges
- Emre Sezgin and Sevgi Özkan, A Systematic Literature Review on Health Recommender Systems

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