The Recommendation Problem

Assume that you opened a new book store and have a set of customers who will potentially visit your store soon. Since you want to attract these customers to your store, you decide to suggest them books that they might like. Some of the customers might be your friends and you know their preferences perfectly. In case you don’t know what a customer prefers, you could for example try to suggest her the most popular books first. But in case the customer rejects your suggestions, you must listen to her feedback and try to learn as much as possible. Then, hopefully, next time you will be able to give her a better suggestion.

This is a typical problem from Machine Learning. The preferences of your customers can be represented as entries in a matrix. In the beginning, you don’t know this matrix at all. While you suggest books to customers, you reveal some entries of the matrix and can adjust your recommendation strategy accordingly.

One possible setting was considered in the paper “On Competitive Recommendations”, where the goal was to satisfy every customer with as few book suggestions as possible. In this thesis, you would study some variations of this problem.

Requirements You should be interested in theoretical computer science and algorithms. You will meet on a weekly basis with your advisor and discuss your progress and possible directions.

Interested? Please contact us for more details!

Contacts

• Darya Melnyk: darya.melnyk@tik.ee.ethz.ch, ETZ G93

• Thomas Ulrich: thomas.ulrich@tik.ee.ethz.ch, ETZ G63