PRICE WARS

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Enterprise Platform and Integration Concepts: Research Group of Prof. Dr. Hasso Plattner

Master Project Winter Term 2016/17

How to Survive Pricing Competition: Simulating Strategic Interaction on Online Marketplaces

Motivation

E-commerce is everywhere. Pricing on e-commerce platforms such as Amazon Marketplace is highly challenging. Sellers typically *(i)* have limited demand information, *(ii)* need to decide on prices for many products, and *(iii)* rival against dozens of competitors. For each seller the challenge is to dynamically price products in order to quickly respond to steadily changing market situations.

In this project, we want to build a prototypical marketplace environment to simulate and evaluate different pricing strategies. In this environment, sellers can plug their own pricing strategies and rival with competitors in a simulated market. A dashboard component visualizes ongoing transactions and provides an overview of competing pricing strategies, realized sales, generated revenues, etc.

In the end, the goal of this marketplace simulator is to allow students to test and compare different pricing strategies and to compete against each other. Who will come up with the best pricing strategy?

Project Goals

1. Build the components that form the foundation of an online marketplace simulation scenario:
    a. *Customers:* A customer's choice mechanism that simulates realized sales for upcoming market situations.
    b. *Market Platform:* A central unit/interface that handles the current list of competitors' offers, price adjustment and sales.
    c. *Sellers:* A module that allows a seller to adjust prices. Decisions should be based on current market situations that are provided by the market platform. The aggregation of such kind of market data will be the key for (advanced) sellers to estimate sales probabilities (demand learning) and to derive their own optimized data-driven pricing strategies.
2. To compare different seller strategies, a dashboard will be built that visualizes the live streams of ongoing transactions and provides a detailed overview of competing pricing strategies (such as accumulated revenue, sell-off rate, etc.).

Technology & Skills

Our goal is to develop an event-driven system that allows comparing and evaluating pricing strategies in a competitive manner. The project team decides for a suitable technology stack on their own (e.g.,

Erlang/Mochiweb, Python/Flask, or Go/Gorilla). Experience with modern web technologies and visualization frameworks are welcomed.

Contact

You are welcome to visit us in the "Villa" or reach out to one of the contacts listed below. For further information, we also invite you to an upfront **informal meeting in room V2.16 on August 2nd, 2016 at 1.30 PM**.

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