

MSc Seminar, Dominic Foldvari

Name of student *

Gyulai László, Györgypál Zsolt

Summarize the talk in 5-10 numbered sentences. Some guidance: What is the physical setup presented? What are the control parameters? What are the quantities measured/calculated? Which methods were used? Is this subject particularly interesting or relevant? Why? Do you have any questions? Any comments, suggestions regarding the presentation? *

1. The topic of the presentation was the optimization of online purchasing.
2. The calculated prices were done considering only one customer.
3. The unit price of the items depends on the number of items a seller sells at a time.
4. There are different optimizations for this problem, for example genetic-type algorithms, just like in the traveling salesman problem.
5. Another approach to this problem is the so called Monte-Carlo tree search method, in which your task is to find the optimal route using trial-and-error.
6. The calculation of prices with more than 1 customer is much more complicated.
7. Please don't use small black texts on red or green background, it is hard to read, in addition Zsolt is colorblind :*(

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Bendeguz Sulyok

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1: Two symmetry breaking generates the problem of the optimization of choice of sellers:

2: Sellers often apply unit prices on their items as well as quantity discounts in order to incentivize customers to buy more (bulk shipping also costs less per item).

3: Items might not be available at each seller.

4: A problem of this sort forms an NP complexity class.

5: One option to find the optimal combination of sellers is to apply brute force, where each possible combinations of sellers are considered and uniquely calculated for; this, however, takes too much time.

6. Another possibility is the so called price jump method, where a graph of all options is spanned and Monte Carlo tree search is used to reach a good – but not necessarily optimal – estimation.

x: A clarification of price calculation on the specific 2-seller problem at hand would have been nice.

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Borsi Márton, Tamás Gábor

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1. The title slide raised attention with its bright colors and well-known company logos.
2. The speaker often tried to avoid eye-contact with the audience, which made him look less self-confident.
3. The main goal of the speaker is to find the most optimal solution in a multi-seller environment, where quantity-based discounts are present.
4. The problem is similar to the traveling salesman problem, therefore genetic-type algorithms can be applied to find an optimal solution.
5. The Monte Carlo Tree Search method was used.
6. It was a little unclear what the term "price jump" means.
7. The "Price jump combinations method" slide contained a graph where the size of the labels was very small, the background of the nodes was too dark, making it more difficult to understand the concept.
8. Having a general Physics BSc background, one might not be familiar with the concept of simulated annealing, Monte Carlo simulation, genetic algorithms, etc.

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Zoltan Varga, David Szasz-Schagrin

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1. The "physical" system consisted of three components: buyers, sellers and the online marketplace.
2. The items have unit prices at each seller, they are available somewhere, buyers place bulk orders and each seller offer quantity discounts.
3. Our job is to find the lowest price for an order. The discounts make this job non-trivial, making this an NP complex problem.
4. We can use brute force methods, or genetic type algorithms. They are using the Price Jumps Method (?) which they implement by a Monte Carlo Tree Search with simulated annealing.
5. They can find the minimum/minima of the price with this for one buyer (order).
6. Future tasks will involve implementation of solution for multiple buyers and also for maximal profit of the sellers.

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Reka Szilvasi, Zsolt Szabó, Zsombor Szilágyi

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The topic of the presentation was about the algorithms for online marketplaces. He claimed that one reason to work on this field is that we live in a world full of online marketplaces. The main question is how to optimize the quantity discounts the sellers apply: find the best combination of sellers for each item to yield the lowest total price possible. The problem arises when a large number of items and sellers are available due to quantity discounts. It was assumed that quantity discounts disregard the type of the item. He mentioned three possible solutions of this optimization problem and detailed their approach which was price jump combinations method using the Monte-Carlo Tree search. The result of this method was not perfectly clear to us. The presentation was a little bit hard to follow, at least one of us lost track at approximately 2/3 of it.

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Vízkeleti Áron, Budai Ákos

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The topic of the talk was optimization of online marketplaces.

The task of an online vendor is to find the best possible combination of sellers to a buyer.

Different sellers have different unit prices and quantity discounts, so depending on the item and its quantity a different set of sellers might be the optimal choice.

The brute-force method is computationally heavy (NP complete) hence the speaker proposed a method called "Monte-Carlo tree search".

The method uses a probabilistic routing between combinations.

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Sári Péter, Horváth Anna, Balázs Péter

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1. The talk was about finding the ideal pricing for items in a marketplace with multiple sellers.
2. Due to the multiple parameters and sellers it's often not trivial which seller to choose.
3. Different algorithms can be used to calculate the optimal choice, such as genetic algorithms or, like in this case, price jump combinations method.
4. Price jump: a pair of seller and quantity.
5. We can perform this using Monte-Carlo tree search.
6. If the customer gets the lowest price we did a good job.

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Kovács Panna, Szombathy Dominik

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1. We weren't connected to the topic, because it wasn't from the field of modern physics.
2. The presenter introduced an optimization problem and also listed a variety of solutions (for eg. NP complexity class, brute-force method).
3. Dominic chose to solve the upbrought problem with a so called price jump combination method.
4. For a better understanding he demonstrated the method with a simple graph representation.
5. Calculating every element of the graph is really time consuming, so Dominic decided to use Monte-Carlo Tree Search, which led to reasonable results.
6. The results can be computed under a predefined time-limit, so it's also useful for the seller and buyer.
7. The talk was understandable, well paced, although he was mostly talking to the presentation, not the audience.

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