



I. IDENTIFICATION DATA

Thesis title:	Data-Driven Automated Dynamic Pricing for E-commerce
Author's name:	Jiří Moravčík
Type of thesis :	bachelor
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Cybernetics
Thesis reviewer:	Dominik Seitz
Reviewer's department:	Department of Computer Science

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	extraordinarily challenging
<i>How demanding was the assigned project?</i>	
I rate the assignment as extraordinarily challenging. The student had to collect and prepare his own dataset from two different sources, implement solutions based on this dataset and evaluate them against each other in different ways.	

Fulfilment of assignment	fulfilled
<i>How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.</i>	
The student has achieved all goals of the assignment fully.	

Activity and independence when creating final thesis	A - excellent.
<i>Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.</i>	
The student was proactive and independent in his work throughout. He has independently evaluated the state of the art, pick the methods for implementation, and selected the methods for evaluation. For the evaluation, he has proactively developed a system for additional method of evaluation using a human expert. The student consulted his work often and has shown great progress between all the meetings. The student was also quick to address any issues in his work that came up in those consultations, and proved himself to be a quick learner when it came to the writing of the thesis, quickly incorporating any feedback into the new text.	

Technical level	A - excellent.
<i>Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?</i>	
The thesis is technically sound. The student did a thorough survey of the literature and has used state-of-the-art methods to solve the problem. In the work, he clearly delimits his own work from the literature.	

Formal level and language level, scope of thesis	A - excellent.
<i>Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?</i>	
The thesis uses consistent formalism. The thesis is well-written, with minimal number of typos and grammar errors. The student's writing is fluid and easy to understand, he makes a good job of explaining the theory behind the algorithms to an appropriate level. Overall, the thesis has a good structure and is very well written.	

Selection of sources, citation correctness	A - excellent.
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THESIS SUPERVISOR'S REPORT

Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?

The student has made a thorough search of the literature and he uses adequate sources. The student's contribution is clearly delimited from the prior work by the structure of the thesis.

Additional commentary and evaluation (optional)

Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.

Overall, the thesis is of excellent quality. The main contribution of the thesis is twofold: first, as far as I know, it is the first successful application of the state-of-the-art offline RL algorithms to dynamic pricing. Second, in addition to simulations, the student has implemented and realized expert evaluation of the pricing method, which is well beyond methodology commonly seen in research on this topic.

Throughout, the student has shown high level of skill in planning, research, implementation and.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

This is an excellent thesis on a challenging subject that uses state-of-the-art methods to solve a custom pricing problem in a novel way.

Questions for the student:

- 1. You claim that the behavioral cloning algorithm does not generalize well to new situations while CQL does. Could you show this difference experimentally and how would such scenario look like? What would it take for CQL to outperform BC in all scenarios?*
- 2. You describe that you have experimented with different utility functions and that the choice of utility function had a large impact on the final performance. You settled on a definition that uses profit and page views. Do you think you could get a significant performance boost from using yet another utility function?*

The grade that I award for the thesis is **A - excellent**.

Date: **2.6.2021**

Signature: Jan Mrkos