Thesis review

Author: Ruslan Jumurov
Title: Illegal newsletter detection unit
Reviewer: Ing. Jan Šedivý, CSc

Ruslan has focused on an interesting problem of solving NP-hard problem in his diploma work. First he defines the Lock-chart problem. Next he sets goals: how to discover patterns and correspondences between heuristics and Lock-chart problems characteristics by Machine Learning algorithms. The ultimate goal is to estimate performance improvement. As a state of the art solution a Lock-chart solver is described in the third Chapter. Then he describes the heuristic selection and a classification problem. In Chapter 5 he describes very briefly several machine learning algorithms. Most important is the Chapter 7 describing the results. Finally the Chapter 9 is concluding the work and suggests some ideas for future research.

Ruslan is proposing an interesting solution of the Lock-chart problem and compares it with a commercial solver. He is using an existing and very hard dataset. Based on the results he has managed to improve the performance. I consider this to be an excellent result. The selected approach seems to be simple and robust. It probably will be easy to use it in a different domain or solver. The whole work shows high programming capabilities.

The thesis is written in a standard style. Throughout the thesis he is using pseudocode to describe the selected algorithms. The text is well complemented with figures, tables, graphs and references to the literature. The whole work is written in very brief ,mathematical style, therefore it barely reaches 40 pages of length. The concise style is hurting the Chapters 6 and 7 explaining the implementation and discussing the results. These sections are hard to understand and decipher. Many graphs would require deeper discussion. Some of the information needs to be put together from different pieces of text. The experiments results are not reported precisely, it is not clear what data sets were used.

Overall the reported results are very good and except the last chapters, which might have been affected by the time pressure before the deadline, the work is very good and the diploma task has been achieved. The thesis fulfils all requirements and I am recommending it for a defence. I am rating the theses by the grade B.

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