Ph.D. Thesis Opponent's Review

Thesis title: Suffix Graphs and Lossless Data Compression

Author: Martin Senft

Reviewer: Jiří Dvorský

Thesis Structure

The thesis is conceptually divided into six chapters. The first two chapters establish basic topics, notations and properties of stringology, graph theory and suffix graphs. The chapters three and four constitute the main part of the thesis. There are comprehensive description of incremental suffix tree construction with linear time complexity and maintenance of suffix tree of sliding window with amortised constant time per one input symbol. Proposed algorithms for suffix graphs are formally described, their complexity is proved. The usage of suffix graph in data compression methods both in current state-of-the-art compression methods and newly developed compression methods are proposed in the chapter five.

The thesis brings unified approach to suffix graphs construction and sliding window maintenance. All of proposed algorithms are also implemented in C++ and thoroughly tested in many experiments. The outcomes of the experiments are thoroughly discussed. All crucial parts of the thesis has been published in conference papers even in journal paper.

Author's Publications

The author does not explicitly provide list of his publications in the thesis, but they may be easily found in WoS or Scopus databases. In WoS and Scopus there are 3 and 4 publications respectively. I appreciate the publication at Data Compression Conference (DCC) which is considered as top conference in this research area, paper at SPIRE is also interesting. The best publication result is article in Journal of Discrete Algorithms from 2012. I think that these numbers and quality of publications are sufficient for Ph.D. student. But I have one question: why is there such a gap between years 2008 and 2012? There is no publication for four years? No research?
Formal Aspects of the Thesis

Formally, the thesis is carefully prepared, using very good and clear English. Tables and especially figures with graphs are clear and easy to read. Typography of the thesis is on high level.

Conclusion

I am convinced that the presented Ph.D. thesis represents excellent study providing valuable contribution to the state of scientific knowledge in the area. The author has demonstrated his potential to individual scientific work. I recommend the thesis for defense.

Olomouc, August 21st 2013

Jiří Dvorský
Department of Computer Science
VŠB – Technical University of Ostrava