Ph.D. Thesis Opponent's Review

Thesis title: Advanced Methods for Landslide Assessment using GIS

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Reviewer: Jiří Dvorský

Thesis Structure

The thesis is conceptually divided into two parts — the first part represents theoretical core of the thesis while the second part contains three case studies. In the first part author provides some introduction, defines the objective of the work and also gives some basic definitions and principles of the landslides. Chapter four presents related works.

Chapter five represents the main chapter of the first part. This chapter describes methods a procedures for landslide assessments. The selection of attributes considered in the following computations are given first. The next sections describe proposed approaches to landslide assessments, including heuristic, statistical, machine learning a deterministic one. Model evaluation methods are describes in this section too.

There are three case studies in the chapter six. This chapter contains nearly 70 pages! The chapter is the second main chapter in the thesis. The first case study, Fruška Gora Mountain in Serbia is extensively studied, all described assessment method are applied and carefully evaluated. The evaluation gives initial estimate which methods should be used for further research and which methods provide unreliable results. All experiments are precisely evaluated and results are shown in the maps.

The final chapters contains very detailed discussion of experimental results, proposed methodology and general recommendation about suggested methodology.

Comments

I have only some comments or questions. Are there any results, papers, concerning usage other methods of multi-criteria analysis? I think that k-NN clustering algorithm is one of the simplest clustering algorithm? Is it possible to use some other algorithms to divide training set to 'slide' and 'non-slide' subsets? SVM is certainly an effective method of classification. Did you consider some other ANN methods? Such as Learning Vector Quantization or Radial basis function network? I'm wondering about your opinion on the possible outcomes.

Formal Aspects of the Thesis

Formally, the thesis is carefully prepared, English is very good. Tables and figures are carefully prepared. I have only one comment to formal aspect of the thesis. Narrow page margins lead to very long, hardly readable, lines. The problem is compounded by the small line stretch. Personally, I would prefer 160 pages of readable text from 120 pages of dense text. Nevertheless, up to this exception, the typography of the work is on very high level.

Author's Publications

The authors provides a list of 17 publications. Three of them are registered at Web of Science, including 1 paper in journal with impact factor. There are 7 citations on WoS, H-index is 1. Scopus database provides similar results – 3 records, 9 citations, H-index is 2. Article in impacted journal is an indisputable success, two publications at WoS is a success too. I think that the number of publications constitute good standard for Ph.D. student.

Conclusion

I am convinced that the presented Ph.D. thesis represents mature 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 defence.

Olomouc, June 9th 2013

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