Opponent's Review of the Bachelor's Thesis

Object Detection in High Resolution Satellite Images

Author: Teymur Azayev

Opponent: Ing. Michal Kubínyi, Ph.D.

Evaluation of the thesis (0-10 points):

1.	Demands on theoretical, practical and application knowledge	10
2.	Contribution to practice	7
3.	Objective formulation	10
4.	Structure of thesis	9
5.	Adequacy of literature survey and information sources	10
6.	Author's own contribution to solution	9
7.	Application of selected methods	8
8.	Correctness and adequacy of derived conclusions	9
9.	Text clarity, language standard	8
10.	Formal correctness	10
Total number of points:		**90**

Final evaluation: I recommend the thesis to be defended and I suggest the evaluation **A / excellent**.

Date: June 11, 2016 Signature of opponent

Position of opponent: Opponent works as software development leader in area of image processing, classification and automated recognition in x-ray imaging.

Posudek oponenta bakalářské práce

Detekce objektů v satelitních snímcích pořízených ve vysokém rozlišení

Autor: Teymur Azayev

Oponent: Ing. Michal Kubínyi, Ph.D.

Vyhodnocení práce (0-10 bodů):

1.	Náročnost práce na teoretické, praktické a aplikační vědomosti	10
2.	Využitelnost výsledků v praxi	7
3.	Formulace cílů práce	10
4.	Struktura práce	9
5.	Adekvátnost použité literatury a zdrojů informací	10
6.	Autorův vlastní přínos k řešené problematice	9
7.	Aplikace zvolené metodiky	8
8.	Správnost a adekvátnost vyvozených závěrů	9
9.	Srozumitelnost textu a práce s odborným jazykem	8
10.	Přesnost formulací	10
Celkový počet bodů:		**90**

Celkové hodnocení práce: Bakalářskou práci doporučuji k obhajobě a hodnotím známou **A / výborně**.

Datum: 11. června 2016 Podpis oponenta

Pozice oponenta: Oponent pracuje jako vedoucí softwarového vývoje v oblasti zpracování obrazů, klasifikace a automatického rozpoznávání v průmyslové radiografii.

Comments to evaluation

Demands on theoretical, practical and application knowledge 10

Student has to analyze and absorb understanding of image processing used for detail enhancement. The second step requires details recognition and classification. All the algorithms have to be studied and optimized for large images such as satellite images. The student has carefully described all the aspects of this process.

Contribution to practice 7

The goal of this work which includes high level of image processing including data interpretation and information extraction is very challenging. This tool would be very useful in areas where no other common system cannot be used. The focus on ships limits results and algorithms to very specific application.

Objective formulation 10

The objectives are well defined and logically organized.

Structure of thesis 9

The thesis is systematically organized into its different parts. The structure and methodology were clearly described. The work does not include any on remote sensing sensors. Related work should include image processing and remote sensing should be part of introduction.

Adequacy of literature survey and information sources 10

The main sources of information were identified. The bibliography includes all important and related works. The references were done according to required standards.

Author's own contribution to solution 9

The student showed great effort to test all available and suitable preprocessing and optimization algorithms. The student could also include discussion how to track not only a type of objects but also each object separately and difficulties with implementing such extension.

Application of selected methods 8

The described algorithms were well applied to available data. The student has discussed limits of this dataset. The guidelines of this thesis included general goal to process satellite images. Algorithm application to different objects in satellite images and its limits could be discussed a little bit wider.

Correctness and adequacy of derived conclusions 9

Results, the conclusion matches the objectives. The aim of the work includes design and implementation. The results and electronic documentation did not include application even the framework is open source and could be tested with different objects.

Text clarity, language standard 8

The chapters are well structured. The text is quite clear but also includes high end mathematical solutions. Chapter 4 has information which has been compressed higher than in the other chapters and reader would acknowledge wider description explained in reference papers. The author could present his understanding of this part.

Formal correctness 10

The text is correctly formatted, the layout is well done.

Possible questions for thesis defense and discussion:

How fast is the image update from satellite and for what kind of other objects could be the algorithm suitable.

Date: June 11, 2016 Signature of opponent