NTNU - NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET
Faculty of Engeneering Science and Technology
Department of Civil and Transport Engineering
TBA4925 - Master Thesis

Optimizing the micro-tasking workflow and exploring it's usage potential within geospatial data

Anne Sofie Strand Erichsen
Trondheim, June 2017

DAIM page

Background

HEI

Task Description

The micro-tasking method is becoming more and more popular. Companies like Amazon develop micro-tasking web applications where people can earn money by doing micro-tasks for others. The method is used for tasks that involve both use of technology and a large number of people. By using the micro-tasking methodology, this thesis aims to study how people solves micro-tasks within geospatial data imports, which is a very complex and large process.

This study will have an emphasis on the data validation and conflict handling part of the import. These parts are complicated to do fully automatic through scripts. By varying the number of objects to solve at a time, adding rewards on some tasks, among other factors, the study will hopefully find a significant approach to prefer when using the micro-tasking method within geospatial data. What are the number of objects optimal within a task to get it completed as quickly as possible? Does the quality of the work vary between the different tasks given? Do amateurs manage to do the tasks? Do rewards have an impact on how the tasks are solved?

This thesis will also explore the micro-tasking methods usage potential within geospatial data. Can other organizations doing a process that needs humans to interfere take advantage of this method? An example is OpenStreetMap, who has taken good advantage of the method both in mapping and import projects.

Specific tasks:

- Study related literature
- Do a micro-tasking survey

- Examine how many elements are optimal when creating geospatial micro-tasks

Abstract

This paper propose a method for extracting buildings in satellite photos. The proposed network makes use of a digital surface model and multispectral satellite data. It

Sammendrag

Sammendrag på norsk

Preface

This paper is a master thesis written for the Department of Civil and Transport Engineering at the Norwegian University of Science and Technology (NTNU) in Trondheim, Norway. It is a part of the study program Engineering and ICT - Geomatics, and was written in the spring of 2017.

I would like to thank my supervisor Terje Midtbø for his help and feedback, and also Atle Frenvik Sveen for his support and help every time I needed it.

Trondhiem, 2017-06-16?
Anne Sofie Strand Erichsen

Contents

1. Methology and experiment

1.1 Web-application

This thesis used an online web-based survey to conduct the experiment. An online survey avoid the cost and effort of printing, distributing, and collecting paper forms. Many people prefer to answer a brief survey displayed on a screen instead of filling in and returning a printed form (Ben and Plaisant, 2009).

In a self selected sample, which is some the case here, there is potentially a bias in the sample (Ben and Plaisant, 2009).

1.2 Pilot-test

It is important to pilot-test the survey prior to actual use (Ben and Plaisant, 2009). A pilot-test provides an opportunity to validate the wording of the tasks, do the paricipants understand the tasks? It also helps understand the time necessary for completing the survey, which should be communicated to the participants in prior to the survey (Schade, 2015). The pilot-test is conducted with a small sample of users. Results from the pilot-test can be used to determine the sample size. The sample size tells us how many responses that are needed (Smith, 2013). The formula for determining the sample size requires the standard deviation, how much variance to expect in the response (Smith, 2013). This standard deviation can be calculated from the pilot-test results.

A pilot-test was conducted with a total of eight participants, five experienced and three none experienced participants. After the pilot-test the usability was measured by using the *System Usability Scale*(SUS). This scale gives an subjective measure of usability, which is usually obtained through the use of questionaires and attitude scales (Brooke, 1996). SUS was developed by John Brooke and consists of ten statements where the participants rate their agreement in an five-point scale (Ben and Plaisant, 2009). The usability is important to measure. If the participants doesnt understand how the web-application works, they will probably not do the survey since they then have to invest time in understanding what to do. Usability is important to get enough participants to do the survey.

1.2.1 Conduction of the test

The participants conducted the survey while observed by the author. The author took notes and watched if the participants understood the questions in the survey correctly. To get an subjective assessment of the web-applications usability the *System Usability Scale*(SUS) was used.

Bibliography

Ben, S. and Plaisant, C. (2009). *Designing the User Interface*. Pearson, fifth edition.

Brooke, J. (1996). *SUS-A quick and dirty usability scale. "Usability Evaluation In Industry"*. Taylor & Francis.

Schade, A. (2015). Pilot Testing: Getting It Right (Before) the First Time.

Smith, S. (2013). Determining Sample Size: How to Ensure You Get the Correct Sample Size | Qualtrics.