IT3010 Metoder for forskningsbasert innovasjon i IT

Research Plan

Improving the process of comparing univerity courses

Amount of resources planned:
40 hours per week

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May 8, 2016

1 Purpose

The motivation for this research is based on a thesis suggestion made by Rune Sætre at the Department of Computer and Information Science (IDI) at NTNU.

In 2015 it was decided that NTNU would merge with HiG, HiST and HiAls [1]. As a result of this, the new university is, at the time of writing, reworking its organizational structure to accommodate for the merge.

This includes going through the study programs of the old university and university colleges, in order find overlapping courses and courses that complement each other[2]. Having multiple courses with the same syllabus is redundant, and these should either be merged into one course or reworked to differentiate the courses from each other.

NTNU offers over a thousand courses for its students [3]. These courses combined with all the courses from the newly merged institutions makes up for a large number of possibly duplicate and redundant courses. All these have to be evaluated manually; an enormous job which will take a considerable amount of time and resources. In our research, we will look into the possibility of automating comparison of courses and proposing merges. Our research will also focus on determining what course meta data must be available to precisely calculate overlap.

Another, similar, problem we will address in our research, is the process of approving courses from other universities when NTNU students go abroad as exchange students. Currently, this process is done manually by faculty staff, and according to our supervisor Rune Sætre at IDI, this is a very time consuming process. The staff have to manually go through the syllabus of the courses, and determine whether or not they have enough overlap to be approved. Occasionally, this requires the faculty staff to have domain knowledge of the relevant syllabus to properly approve courses. This problem is very similar to the course merge problem, as they both will compare syllabuses and somehow give a response of how similar they are.

There hasn't been any notable research about merging university courses. However, the problem is mentioned in a report from The European University Association (EUA) about university merges in Europe [4]. Specifically, the report mentions a process coined *academisation*, in which courses from a university college level are transferred to a university level. In addition to finding courses that should be proposed merged, there is consequently a question whether or not the resulting course is on an academic level. This, however, might be out of the scope of our research to determine.

With our research, we hope to gain insight in how much course meta data is needed to precisely determine course overlap. We also hope to find out how accurate course comparison can be, given different amounts of data about courses.

From the background information presented in this chapter, our research will

address the following research questions:

- RQ1: What data must be available in order to precisely determine course overlap?
- RQ2: To what extent would it be possible to automate the process of determining course overlap?

2 Contributions

The main product of this research will be a computer-based tool that can aid faculty staff in calculating course overlap, based on existing information about the courses. Our prestudy has not resulted in finding any existing solutions, so at the time of writing we consider this to be the first contribution of its kind.

3 Research Method

The basis for the research originates from a need at faculty level at NTNU about comparing and merging courses. Based on this need, the research questions were formulated. The goal of the research is not only to further investigate the research questions, but also to develop an IT artefact which can be used by faculty staff. Therefore, our selected research strategy is *design and creation*. As data generation method, we will conduct interviews with staff and key persons who work with course comparison and approve exchange plans for students. The selected strategy and data generation methods provives quantitative data for analysis.

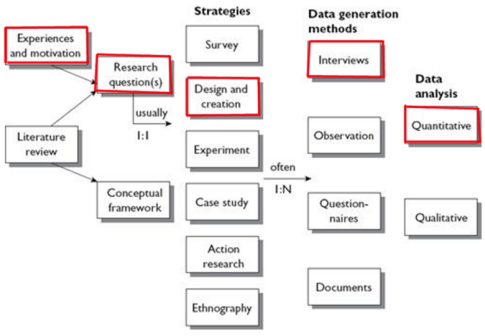

Figure 1: Research method

4 Participants

During this project, we (Andreas Røyrvik and Magnus Lund) will be the researchers responsible for performing the project described in this research plan.

Rune Sætre will be our supervisor, providing us with his experience in the field of computer science. One of his responsibilities as an employee at the Department of Computer and Information Science is to approve courses that exchange students have had during their study abroad. This give him first hand experience on how to compare courses, in order to determine their overlap.

This research will focus on merging courses at the new NTNU, and will thus have the institutes at NTNU as participants. By contacting faculty staff at different institutes, we hope to gain insight on how course comparison is currently done. We believe that many in the faculty staff will be interested in this project, as it is intended to better their workflow.

5 Research paradigm

As the strategy for this project will be design and creation, the paradigm will relate closely to the pragmatic paradigm. By creating this tool, we hope to solve a very concrete problem, aiding universities in calculating course overlap.

6 Final Deliverables and Dissemination

This project will culminate in two deliverables; one being the master thesis, and the other being the code produced throughout the project. The resulting code base will be a working system which faculty staff can make use of when comparing courses.

References

[1] *NTNU merging with HiAls HiG and HiST*. 2016. URL: `http://www.ntnu.edu/ntnu-merges-with-university-colleges` (visited on 05/05/2016).

[2] *NTNU merge FAQ*. 2016. URL: `https://www.ntnu.no/fusjon/faq` (visited on 05/05/2016).

[3] *NTNU list of subjects*. 2016. URL: `https://www.ntnu.no/studier/emner` (visited on 05/05/2016).

[4] *Defined Thematic Report: University Merges in Europe*. 2015. URL: `http://www.eua.be/Libraries/publications-homepage-list/DEFINE_Thematic_Report_2_University_Mergers_in_Europe_final` (visited on 05/08/2016).