

Scoping II: Computational Analysis

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1 Introduction

Throughout the first scoping project most of my pains and gains revolved around two main areas. The first area was improving my note organisation, and the second was improving my referencing ability. While I am more interested in continuing this project for note organisation, I am concerned that the technology that currently exists may not be advanced enough for that to be a viable option. Therefore, for this second scoping project I will be focusing on both of these areas.

2 Decomposition

2.1 Note Organisation

The first step of note organisation is that I must actually take the notes:

- To start with I am usually taking these notes on a seminar or a reading. I have a strong preference for taking hand written notes at this early stage as I believe the physical act of writing helps me to organise my thoughts.
- When my thoughts have developed further I will usually switch from physical note taking to digital note taking. These notes are usually very early drafts of ideas or paragraphs for an essay.

The next step of note organisation is the storage of the notes:

- My hand written notes are kept in notebooks labelled for each subject.
- My digital notes and essay drafts are kept in folders named after the subject that they are for.

The final step of note organisation is accessing the information:

- At the moment accessing my notes involves a lot of back and forth between my hand written and digital notes.
- It also involves scanning through pages to find the specific topics I am interested in.

A solution to this issue would be a tool that could allow me to digitise my notes. This would keep all my notes in the one place, and would allow me to search through my notes for specific terms much quicker. Such a tool would follow the following steps:

- Take photo of or scan hand written notes
- Place photo of notes into digital storage
- Run handwriting recognition software
- Check output against original input
- Repeat above steps until all notes are done

2.2 Referencing

The first step of referencing is to find the information that I would like to reference. This involves:

- Finding the text that I wish to reference
- Scanning through the text for information (author, title, year, publisher, etc.)

The next step is to put the referencing information into the document:

- Write information in bibliography in the correct formatting
- Indicate where citation is required as I write by writing (NEEDS REFERENCE). I rarely cite as I am writing as I find it interrupts my flow of thought.
- When I have a break in thought I go back and add citations where they are required.

Next I will edit the document. This involves:

- Checking all the (NEEDS REFERENCE)'s have been changed to have a citation
- Checking every citation has a corresponding bibliography entry
- Checking all the bibliography entries have at least one corresponding citation
- Checking all the citations and bibliography formatting matches
- Changing the format of each citation and bibliography entry if submitting the work somewhere with specific requirements

Most of my issues with formatting seem to be in the editing and formatting stages. To solve these issues I would want a tool that increases the speed of citation and the ease of formatting. This tool would allow me to:

- Input bibliography information
- Quickly click which bibliography entry I am referring to as I am writing citations
- Format bibliography and citations for me
- Allow for ease of changing formatting

3 Pattern Recognition

For both the note organisation and referencing projects the main time waste is that I have to repeat the same task over and over. For the project involving digitising my notes I have to run the hand writing recognition software on each file until the task is complete. On the other hand, when I am reformatting my references at the moment I have to change each reference to the new style. In both of these examples there are simple tasks that need to be repeated a lot.

4 Algorithm Design

4.1 Note Organisation

For the project in note organisation I would want to make a program that uses existing handwriting recognition software to digitise my hand written notes. I would want the program to:

1. Allow me to select files (single or multiple) to be digitised
2. Run handwriting recognition software
3. Output digitised copy to specific folder
4. Repeat steps 2 and 3 on each file until all are processed

4.2 Referencing

For the project about referencing I would want to make a program that can assist with speed of citation and formatting references. I would want the program to:

1. Allow for input of bibliography information
2. Provide a list of options based on bibliography information when I want to make a citation
3. Input correct citation with correct formatting

If this kind of program exists (I suspect bibtex will be a major asset for a lot of my citation issues), I will focus on creating a program that increases ease of use. This program would:

1. Store information for different references I am likely to use
2. Allow for input of documents
3. Allow me to choose which referencing style I want to use
4. Run changes on document
5. Output results