ATHABASCA UNIVERSITY

YOUR THESIS TITLE

BY

YOUR FULL NAME

Supervisor: Supervisor's Full Name

Co-Supervisor: Co-Supervisor's Full Name

A thesis proposal submitted in partial fulfillment

of the requirements for the degree of

MASTER OF SCIENCE - COMPUTING AND INFORMATION SYSTEMS

Athabasca, Alberta, Month, Year

ABSTRACT

An abstract that, in one or two paragraphs, provides a concise summary of the proposed research work including a statement of the problem to be solved and how the student expects to solve it. This is one of the most challenging parts of the proposal to write since you must provide some critical details without having yet given the reader background knowledge. It is probably best to write the abstract last!

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Research Problem

A concise problem statement that, in one to three sentences, describes specifically what the problem is that you intend to solve. This problem statement can be technical in nature. The problem statement can, if you like, be provided at the beginning of the Introduction section but should certainly be somewhere very near the beginning of the proposal to help provide context (for the reader) to the material you later provide. Please note again that the word *problem* is intended to be interpreted broadly. It is entirely possible that your *problem* might be less specific in nature.

Introduction

An introduction that describes the problem area and motivates the need for your proposed work. In the introduction you need to say why you are doing the proposed work and what its significance is (i.e., whether anyone else cares about what you are doing). It is in the introduction that you typically also define or explain most of the necessary terms and acronyms. You also need to provide a quick sketch of your proposed solution and briefly explain how it differs from other work. Be sure to build from more general concepts to more specific ones so that the reader will understand everything. You should be able to have someone else read just your introduction and be able to then tell you what you are proposing to do and why it is interesting. That is, the introduction should be understandable by itself without the rest of the proposal.

Literature Review

A section that surveys previous work related to what you are proposing. This section should be carefully written and organized to make the relationships between the earlier research efforts clear and to also explain how that research relates to your proposed work. It is primarily this section that makes it apparent to the committee that you are, in fact, prepared to undertake your proposed work. The work you reference should be quite extensive, relevant, and recent. Insufficient references suggest to the committee that you may not be aware of all the related work, and this means it is possible that your work may already have been done by someone else.

The inclusion of irrelevant (or too many) references may lead committee members to question your understanding of the area. Finally, lack of recent references might suggest that your

proposed work is no longer of interest or is, perhaps, a problem so challenging that other researchers have chosen to overlook it.

Be careful to base your related work on quality publications. All (or very close to all) of your reference papers should be from well-respected, refereed sources (i.e., journals or top-tier conferences in your selected area). Referring to dubious papers lessens the committee's confidence in your thesis proposal.

Finally, your selected papers should reflect a reasonable amount of breadth in terms of authorship and source. Insufficient breadth might lead the committee to fear that you are following individual opinion instead of well-founded and widely accepted scientific results.

Problem Description

Although you have already described the problem you are addressing in general terms, you need to assure the committee that you have thought of all the details of that problem (and the environments in which it occurs) that might affect your proposed solution. The detailed problem description further convinces the committee that you know everything that is necessary to undertake your proposed research work.

Research Methodology and Expected Results

Although you may not know the precise details of how you will solve the problem you have just described, you should be able to give the committee sufficient detail to convince them that what you are proposing is a good idea that can be done within the time constraints of an MSc degree and that you understand the issues associated with the techniques you intend to apply. In particular, you should be able to describe how your proposed solution will address the details of the problem and environment described in the previous section of your proposal. You should also realistically summarize what you see as the advantages and disadvantages of your proposed solution and, accordingly, what you expect the results of your work to be.

Evaluation

A description of how you propose to undertake the evaluation of your work. You must ultimately be able to answer the question of whether or not the work you have proposed and (later)

completed is important. This is often done by direct comparison with other, existing work in the field. Such comparisons may be done experimentally, analytically, through simulation, or possibly a combination of these. For example, you might be proposing a thesis where, at the end, you will want to compare the performance of an algorithm you developed and implemented with the performance of a similar existing algorithm. When doing this, always try to make the comparison(s) as objective and meaningful as possible. Compare your type of apple to someone else's type of apple, not to an orange. Be sure to explain the methodology behind your comparison (e.g. how you will gather performance results accurately or how you will construct and run a simulation study). Always remember to keep statistical significance in mind whenever this is appropriate. Results based on samples of small size do not constitute evidence of improvement nor do results where the degree of improvement exceeds the margin for error in the experiment. When doing the assessment, try to be totally objective and always resist the temptation to tweak your work until you get the "expected" results. Instead, explain the results you get.

Resources Required

A statement of the resources required, if any, to complete your work and a description of where you will gain access to these resources. For example, if you need to have dedicated access to a certain number of machines for an extended period of time, then you need to say that you have the agreement of the machines' owner(s).

Timelines

A tabular set of timelines that provide realistic estimates of when the major phases of your thesis will be completed (including the writing of your thesis). These are often difficult to predict without experience, so be sure to involve your supervisor in setting these dates. Remember that it almost always takes longer than you expect to get anything done and that you will likely also have other responsibilities (e.g. work and family responsibilities) while you are trying to complete your thesis.

Summary

A brief (one to two paragraphs) summary of the proposal (i.e., the previous sections) that highlights the key points in the proposal and provides a list of contributions to the field that you

expect your work to provide. Be very specific when listing your contributions and explain why they are of interest to the computing community.

References

A bibliography of the papers and other resources you have read and cited in your proposal. The bibliography should be ordered in a convenient way, normally by last name of first author and should use a consistent style for all entries. (Note that using LaTeX and BibTeX is an easy way to ensure such consistency and ordering.) Each entry should contain complete information (e.g., no missing page numbers). The selected papers in your bibliography should be carefully chosen to be up-to-date, important references in the field.