# Polytechnique Montréal CAP7001E Ensuring a successful doctorate

Instructor: Michel Perrier 1 credit, Fall 2015

## Research proposal

**Objectives of this assignment**

* Writing a first version of your research proposal.
* Learning to carry out a critical analysis of research proposals in engineering.
* Using feedback to improve your research proposal.

**Part I: Writing the first version of the proposal**

*Due date (submitted electronically on the Moodle site):*

* *Thursday, November 26th 2015 at 13h00*

The first part of this assignment consists in writing a short version of your research proposal (maximum three pages of text). If appropriate, you can include a schematic on a fourth page. The objective is to help you start working on the proposal that you will defend during your preliminary exam. You will have the opportunity to work again on that proposal in CAP7015. The proposal should be written in English.

Please use the following headings as a guide:

Title: Techniques of trace comparison and correlation

**Summary**

Introduction

* Trigger
* Frontier of knowledge
* Question / Hypothesis / Objectives (based on the terminology used in your field)

Does comparing traces of executions/groups of executions, of a task/or similar tasks, can provide meaningful information to improve performance of softwares?

Hypotheses is that we can use machine learning techniques to improve the analysis of tracing comparison. Some restrictions can be found on this comparing since there are too much information to compare, so the knowledge from it would be very useful.

Null hypothesis: the current model of analysis does not take into consideration compare traces as relevant tool for performance.

This research is not about applying methods but is about making mathematical and logical correlations/abstractions for a better understanding of information from traces. Therefore applying this knowledge on real cases and benchmarks to come with real results.

* Strategy (sub-objectives and methodology)
* Expected results

As expected results:

* Originality
* Anticipated impact

* Anticipated risks and approach to manage/mitigate them
* Required resources (the main ones)

Software requirements

Installing lttng, babeltrace, trace compass

Hardware requiments

Computer

* **Proposed timeline**

**2015**

Adaptation and reference

Learning about lttng

Review about SO and parallel system

**2016**

Classes

Reference review

Conference paper

Release of the first paper

**2017**

Classes

Release of the second paper

Conference paper

**2018**

Release of the third paper

**Part II: Critical analysis of research proposals**

*Due date (submitted electronically on the Moodle site):*

* *Thursday, December 3rd 2015, at 13h00*

For the second part of this assignment, you will have to evaluate the research proposals of three of your colleagues. The proposals will be assigned randomly.

For each proposal, fill the evaluation questionnaire “Evaluation of a research proposal” presented in the appendix and also available as a separate form on the Moodle site. In writing your report, please bear in mind that the objective is to help the author of the proposal improve his/her work. Your comments should be both critical and constructive, and they should be written as clearly as possible in order to avoid any ambiguity in their interpretation.

You should make sure to specifically address the originality and the potential significance of the project given the importance of these two criteria.

**Part III: Preparing and submitting the revised version of the proposal**

*Due date (submitted electronically on the Moodle site):*

* *Monday, December 14th 2015, at 13h00*

Please revise your proposal based on the feedback you received. You must submit a single PDF document that includes, in order, the following:

* The revised proposal (maximum three pages and a schematic, if appropriate)
* A concise statement explaining the changes made to the proposal as a result of the feedback received (no more than one page of text)
* The original proposal
* The two anonymous reports

Note: The instructor will provide detailed feedback on the revised version of the proposal. Grading will be based on his evaluation of the quality of the documents produced at all stages of the process (the proposals and the reports).

**Evaluation of a research proposal**

Title of proposal: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Author: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Content (answer each questions using a 1‐5 scale, with 5 being the highest score)**

|  |  |
| --- | --- |
|  | Score |
| **1. Title** |  |
| The title is clear and concise |  |
| The title reveals the originality of the research |  |
| **2. Trigger** |  |
| The motivation of the project is clearly explained |  |
| **3. Frontier of knowledge** |  |
| The literature review is sufficiently detailed and clear to situate the project |  |
| The literature review shows that the writer is thoroughly familiar with his field of research |  |
| The literature review is a true synthesis, not just a compilation |  |
| **4. Question/hypothesis/objective** |  |
| The question/hypothesis/objective is clearly and adequately formulated |  |
| **5. Strategy** |  |
| The overall strategy is appropriate considering the scale of the proposed investigation |  |
| The research design (if applicable) is clearly explained |  |
| **6. Expected results, originality and impact** |  |
| The proposed project is highly original |  |
| The potential contribution is significant and will advance the field |  |
| **7. Anticipated risks and approach to manage them** |  |
| The researcher has considered potential problems and provided contingency plans |  |
| **8. Principal resources required** |  |
| The proposed resources are appropriate and justified |  |
| **9. Proposed timeline** |  |
| The proposed timeframe is realistic |  |

Please explain you scores, pointing out to weaknesses and providing constructive suggestions for improvements (expected length: 15-30 lines). Conclude this section by proving three specific suggestions for improving the proposal.

1. **Form (please answer each of the following questions in 3 to 5 lines)**

* Is the vocabulary clear and easy to understand?
* Does the proposal generally exhibit good writing skills: spelling, grammar, syntax, clarity of thought?
* Does the proposal suggest good organizational skills?
* Does the paper project professionalism?