RIT Department of Computer Science
MSc Thesis Pre-Proposal:
Interactivity of Communicating Processes

Alexander Dean

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The sections shown below are adapted from the topic analysis forms provided in "Writing the Doctoral Dissertation" (2nd edition) by Davis and Parker (pages 82-88). Your final document should be 1-2 pages including references. **The final pre-proposal may present the items below in any format, but using prose (not bulleted lists).**

1 Problem

Identify what problem you are addressing, both in terms of the research area, and the *specific* problem that you will be working on:

- For a thesis, a hypothesis ('thesis statement') that you will test in your research.
- For a project, identify the work required (e.g. implementation and/or experiment) that needs to be completed. If you are completing a project, make sure to speak with your advisor about the expected deliverables; this will include a written project report.

Motivate your problem.

- What is the significance of your problem?
- What applications or new opportunities will solving your problem provide?

Related Work.

- What are the key theoretical models (e.g. process-based, formal language/complexity models, probability-based) and algorithms have been applied toward this problem previously?
- What limitation and/or opportunity do you plan to address in your project/thesis?
- In the related research literature, how is success measured (e.g. metrics and/or coverage of problem aspects)?

2 Methodology

- For projects, which libraries or software tools will be used for development, and at the highest level, what is the software design?
- For theory-based projects and theses, what are the key theorems to be developed and/or proven? What proof techniques will be used?
- For other theses, what algorithms will be adapted or devised, and what algorithms will they be compared with in your experiments?

3 Evaluation

- What data and software will be needed for your evaluation?
- What metrics will you use to measure success? Commonly these include some subset of time, space, and accuracy (recognition rate, precision, recall, etc.). [1] Almost always, this should include reference to the evaluation methods described in the related work.
- For empirical theses, an experiment is needed: which algorithms will be compared, and using what sets of parameters for each? If people are involved in the experiments, how will the experiment control for unwanted bias or confounds? **How does the experiment test the hypothesis?**
- **How will you know when you are done?**

4 Evaluation Outcomes

- For your chosen assessment methods, what are the possible outcomes?
- Under which outcomes are the project goals achieved, or the hypothesis confirmed or rejected?

References

[1] W. Burgard, M. Moors, D. Fox, R. Simmons, and S. Thrun. Collaborative multi-robot exploration. volume 1, pages 476–481 vol.1, 2000.

**(Omitted) As an exercise, modify this document to include the references in the `plain.bib` file.