Computing and Information Sciences
Research Potential Assessment (RPA) Guidelines

The purpose of this formal assessment is to determine early in a student's academic life if he or she has the potential to successfully obtain a Ph.D. from our program. The RPA report is not intended to be the student's dissertation proposal, but rather a document to demonstrate the student's research potential.

Student Requirements

1. Be the sole author of a well-written report of four to six pages in length (excluding references and the appendix). The requirements for the report are provided below.
2. Give a conference-quality presentation of this report to the faculty. The presentation should include the student's future plans for research. Presentations should be 20 minutes in length, excluding questions.
3. Each student's advisor(s) will write a letter describing the work that the student has completed, and evaluating the student's potential as a researcher.
4. The student's grades, along with advisor's letter, and the assessment provided by pre-assessment committee and other faculty members, will also be reviewed by the RPA committee.

RPA Presentation and Report Timeline

The RPA presentations are scheduled on Wednesday and Thursday before the day of RIT Convocation and Commencement ceremonies in spring. RPA candidates should submit their research report two weeks before the day of Convocation, while students' advisors should submit their evaluation letters one week before the day of Convocation.

Format for the Research Report

All students must include all sections below except for Section 4c in their research report, outlining the problem(s) they will work on, related literature, a research agenda, and concrete methods for making progress on this agenda. Students are encouraged to also include Section 4c summarizing preliminary research results, but will not be penalized if it is absent.

1. **Title** and **Abstract** (at most 1 short paragraph)

2. **Introduction:** What is the area of computing that you are planning to do research in (i.e. your research area), and why is this area important? More specifically, what are the research questions that you wish to address? Why are they important (e.g. how can they generalize), and where do they fit within your chosen research area and computing in general?

3. **Critical Literature Review:** A categorization and summary of key problems and techniques in the student's chosen research area. The review aims to provide context for the student's research questions, based on a careful and thorough study of pertinent literature. The review should be critical, i.e. identify the relative strengths and limitations of different techniques, and identify unanswered questions (i.e. open problems). You should show awareness of both the details of contemporary literature that your research will build upon and the context of where

that research is situated in the field at large. You should also identify appropriate publication venues for your work.

4. **Research Plan**
    a. *Research agenda*: Based on the analysis in your literature review, identify the steps needed to answer your research questions, including alternative steps if appropriate.
    b. *Methodology*: Describe methods that you have or will use to answer your research question(s). The scope should be roughly what is needed for one research paper. Include pertinent techniques (e.g. algorithms, designs, theories, or protocols), data and other resources, and evaluation metrics. Also provide a rationale for your methodology that is informed by your literature review.
    c. *Progress:* Describe any milestones achieved or intermediate results towards investigating this agenda or conducting the methodologies described above (e.g., data sets generated, survey frameworks created, software packages, etc.). While not compulsory, we encourage students to include preliminary results if available for the work outlined in Section 4b. Negative results are fine: these provide learning opportunities, and often determine future research directions.

5. **Conclusion**: A brief summary of the research problem(s) you are pursuing, the relationship of proposed research directions to related work, and next steps you will take in your research.

6. **References**

7. **Appendix:** Describe how your research fits within the larger context of your advisor and/or lab's research program.

Templates: Use one of the following paper templates to prepare the report.

- Standard IEEE conference paper templates: http://www.ieee.org/conferences_events/conferences/publishing/templates.html
- Standard ACM conference paper templates: http://www.acm.org/publications/article-templates/proceedings-template.html

Advisor Guidelines

Advisors should provide general review, guidance, and suggestions to a student's report and presentation. In addition, advisors will submit a candid letter commenting on the student's research potential and progress. This letter is not intended as a letter of support, but rather as an evaluation of student characteristics and work quality. The letter typically covers the following aspects:

- Student's research potential and progress: Provide comments on the student's background and progress, along with their potential to be a successful Ph.D. candidate.
- Student's work ethic: Provide comments on 1) the student's engagement with aspects of academic discourse such as demonstrating curiosity, attention to details, willingness to engage in discussion, response to feedback, and dealing with obstacles; 2) the student's effort and general attitude when working through his/her research paper and presentation.

- Advisor's role: Advisors should provide context for the student's written paper and research, by explaining how student's research fits within the larger context of the advisor's research. The information regarding the advisor's role in problem determination, method selection, data analysis (if applicable), and future direction etc., will help evaluators to give a fair and consistent assessment of students who are exploring a new research direction.

Faculty Guidelines

Please remember that first-year Ph.D. students are not fully formed researchers. The RPA is designed to assist with the difficult task of establishing a trajectory for each student, such that faculty members can be confident that a Ph.D. candidate will be able to progress and successfully complete their degree.

While a student's Pre-assessment Committee members are required to assess the student's RPA report, all Ph.D. faculty (permanent, core, and extended) are invited to review student reports and presentations, and then submit their evaluations and comments to the Curriculum & Assessment Committee for consideration. Both the RPA report and presentation should be assessed using the following criteria, based upon skills that one expects a competent researcher to possess. A competent researcher should be able to:

- Explain the value of a research project.
- Explain and summarize existing research in an area, including seminal papers and projects.
- Pose new research questions and creative new directions for research.
- Explain how research fits within a particular research area, and into other lines of inquiry.
- Justify a choice of research methodology, as opposed to alternative methods
- Identify future directions for research.

If a faculty, especially a pre-assessment committee member, wishes to comment on a student's work ethic, the faculty may utilize the "Confidential Comments" area of the assessment rubric.

RPA Process

1. Student reports will be distributed electronically to faculty at least one week prior to the presentations.
2. Advisors submit their evaluation letters prior to the RPA presentations.
3. Students' Pre-assessment Committee[1] members submit their research-paper-assessment-rubric prior to the RPA presentations.
4. In their presentations, each student will give a 20-minute talk followed by a 10-minute question period.
5. All Ph.D. faculty are invited to review student reports and presentations, and submit their evaluations and comments to the Curriculum & Assessment Committee.
6. Collectively, the Curriculum & Assessment Committee members will attend all presentations and reads submitted materials, such as research reports, letters, transcripts, and Ph.D. faculty assessments.

[1] Student Pre-assessment Committee Policy

7. The Curriculum & Assessment Committee makes recommendations to the Ph.D. Program Director, who makes the final decisions regarding the outcome of the RPA.