

MRAD Written In Depth PhD Preliminary Examination

The MRAD preliminary In Depth written examination will take the format of a written proposal, detailing as much as is practical, the proposed research work for the main body of the student's Ph.D. Students will be encouraged to take this exam early in the Ph.D. before they have conducted the bulk of their research and shortly after they have passed the Qualifying Review. The written exam should be immediately followed by a properly scheduled PhD Preliminary Oral Examination.

Several good books exist on how to write proposals. Michaelson's book is one favorite. However, here is some guidance as to what we might expect to see in a good proposal. You are not constrained

1. Introduction

An important part of the introduction is the motivation for the research problem being addressed. It should be as specific as possible arguing why this research should be conducted. Avoid broad generalities and be as specific as possible. For example, "build better radios" is too broad, while something like "improve linearity while decreasing power consumption" is more appropriate. Why should someone care about the presented problem.

2. State of the Art

What is the state-of-the-art in the intended research area? This should include a summary of the relevant literature.

3. Research Objectives and Anticipated Results

What are the goals of your research. Again, be as specific as possible, numerical if possible. You might need to present an argument as to why you chose the goals you presented, rather than others. The goals should be in the context of the research motivation in the Introduction. What key results are anticipated?

4. Technical Approach

What is the approach you intend to use to achieve the stated objectives? What is the key new ideas? What is the expected novelty of the approach? Summarize what you expect your core contributions to be?

5. Preliminary Work

Describe any work to date, indicating key results.

6. Research Plan

Present a constructive research plan including what is to be built/tested/designed/coded etc. and how it is to be validated.

You have a page budget of ten pages not including references. Use 11 or 12 point font and single line spacing. The majority of the report should be sections 1, 3, 4, and 6. Don't just write up what you have done to date and add a bullet list of future tasks. If you have more technical material, e.g . papers or a more extensive background review, add them as appendices.

1. H. Michaelson, "How to write and publish engineering papers and reports".