

What goes into a Research Proposal?

Union College Department of Computer Science

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1 Purposes

A proposal is a description of and argument for a research project you want to carry out. The purposes of a proposal are all about convincing your audience that:

- Your project is interesting and addresses an interesting question or problem – one whose answer or solution others will value.
- Your project aims to answer an important question that needs an answer or solve an important problem that needs a solution.
- Your question or problem hasn't already been answered or solved.
- Your work will build on and add to existing knowledge.
- Your proposed work has a good chance of actually answering the question or solving the problem.
- You are the right person to carry out the project.

2 Sections

2.1 Required introductory sections

You need an **INTRODUCTION** section that introduces and motivates the problem/question. If done right, your audience will know generally what the problem is AND that it's interesting.

You need a **RELATED WORK** section that explains what other research has already been done that informs your work. If done right, your audience will know how your project builds on and will add to existing knowledge. The audience should also now have confidence that your problem hasn't already been solved. The very best related work sections also lead the reader to understand (or at least hint at) what you are going to do.

2.2 Sections describing your planned work

So, at this point in the proposal, the reader understands the problem and why it's important and what others have done. And they have a sense of what you plan to do. Now it's time to tell them in more detail what you plan to do. There are two main flavors, depending on the kind of project you are doing, and some projects combine these two flavors:

- Approach and Evaluation

If your project is motivated by *solving a problem*, then you need an **APPROACH** section that explains how you propose solving the problem, giving your reasons for why you think the proposed approach will work well. Be as detailed as you can, realizing that you haven't yet done all the work.

After you've explained the proposed approach, you need an **EVALUATION** section to lay out what you are going to do in order to evaluate your approach. How will you know that your solution is a good solution (or a solution at all)? What **research question** will you attempt to answer and why? What experiments or analysis will you do to convince yourself and others of this.

- Methods

If your project is motivated solely by *answering a question*, then you need a **METHODS** section describing what you plan to do to answer the question. What experiments or analysis do you plan to carry out and why will they lead to an answer to the question you've posed?

2.3 Additional required sections

You also need an **ABSTRACT** at the beginning of the proposal that summarizes the entire proposal. This should be no more than 200 words.

At the end of the proposal, you should also have a section laying out a **TIMELINE** of the work you are planning to do. This will help the reader understand more fully what you plan to do and how likely you are to succeed.

You'll also need a section listing your **REFERENCES** that you've cited throughout the paper – especially, but not limited to, those works cited in your related work section.

One other required "section": a **TITLE**. You want a title that gives a sense of what you plan to do, what problem you are solving, or what question you are addressing. "Senior Thesis" **is not** a good title, neither is "Artificial Intelligence" or "Computer Graphics" – the title needs to be specific to what you are proposing to do, not just a broad topic area.