### Author Guidelines FOR DIP PROJECT PROPOSALS

*Author Name*

Author Affiliation

#### Abstract

The abstract is probably the most important part of your paper. You write it last. It summarizes what’s in the paper and hits the “take away” messages. It also has an important function of helping readers quickly determine whether or not they should read your paper. It has to have substantial salesmanship to be competitive, but it can’t sound trite or contrived; it has to sound very professional. Writing good abstracts is an art. For submitted papers, as well as proposals and theses/dissertations, the reviewers will formulate an opinion of the whole work from the abstract – after that, as they read the rest, they will be looking for “reasons to accept” or “reasons to reject.” Thus, the importance of the abstract cannot be overemphasized. It will feel uncomfortable to write, both because you aren’t used to “blowing your own trumpet” and because you will feel like you have already “said all this stuff.” You have to “blow your own trumpet” because nobody else is going to blow it for you. You have to say things over and over again because people don’t read a technical paper the same way they read a fiction book. Do not cite references in your abstract. Try to avoid using special symbols in the abstract.

**Index Terms—** not really needed for a DIP proposal.

**1. Introduction**

The introduction is where you:

* Introduce the area of your project, identify the need or “niche” your project will fill, and identify the problem.
* Argue why this problem is important and who should care. What will be the benefit? *Who* will be able to do *what* that they couldn’t do before? Or at least couldn’t do as well before?
* Make some statements about the potential impact of this work. “In this paper, for the first time we/I blah blah blah…” Havlicek says: use “I” for your DIP papers, use “I” for your thesis/dissertation, and use “I” for a single author paper. Other people (like your thesis/dissertation advisor) may say to use “we” even when you are the only author; if so, then do what they say! Use “we” for a paper with coauthors.
* Remember, you are arguing for why this work is *important*. You must clearly state what are the expected or potential original contributions of your proposed work.
* Some people end this section with a “mini-outline” – you have seen this many times if you have read many papers: “The rest of the paper is organized as follows…” I have stopped doing that in my own papers. One day I just woke up and realized that it’s a waste of space and doesn’t help the reader much anyway!

**2. BACKGROUND**

The background section is a summary of what has been done by others that is relevant to your project. What papers have you read? What books have you read? What other sources have you consulted? If this section is turning out to be very short, it can be merged with the Introduction to give just one section that has both the intro and the background. In that case, the “high impact” statements still need to go at the end of the section; they should always appear near the end of the first section.

All paragraphs should be indented except for the first paragraph of each section, which should not be indented. You also shouldn’t have blank lines between your paragraphs.

The background section also sets the stage for the current state of the problem including what is known and what are the open issues that people are working on. It gives you a framework in which to explain what your “piece of the pie” is going to be. Make sure to say “they” when you mean “they” ! And say “we” when you mean “we” and “I” when you mean “I” !

In the background section you will be citing references. Use IEEE style. Consult published IEEE journal and conference papers for the format. Unlike some junior high school reports, in a professional technical paper you do not list any reference at the end unless it is specifically cited in the main text. In other words, any paper that you have in your list of references should actually be cited in the main text. LaTeX does this for you automatically.

While I’m rambling on, let’s talk about length. There is no absolute standard for the length of a DIP proposal because every proposal is unique. If this is your first time using two-column format, you are going to find that a lot more fits on a page than you expected! By the way, I have been using exclamation points but in general you should not use them at all in professional technical writing! As a general guideline, your DIP proposal should be about two double-column pages in length. If it turns out to be about two pages, then that’s probably a good sign. What if it doesn’t? Well, if it turns out to be significantly shorter or significantly longer than two pages, then you should ask yourself: “is there a good reason for that?” The answer might be yes! For example, it could be longer because you have a lot of preliminary results. It could be shorter for a variety of reasons, but the point is: if yours is coming out shorter than two pages, ask yourself if there’s a good reason for that. If not, then fix it!

Here is a final thought about the background section: you are casting the background in your own way. In fact, especially for a thesis or dissertation, a significant part of your contribution might be in collating and organizing all the background work and putting it together in a new way that tells a new cohesive story. In other words, a good background section doesn’t just quote off equations and results from others using the notation and style of each of the other individual authors. Rather, a good background section weaves all of those ideas together to present them in a coherent and perhaps even *new* way. It is “the words of the others” as told by *you*. Thus, you need to present all of those other peoples’ ideas, but in your own style and using your own consistent notation across the multiple other authors’ work. However, you must also realize that the other authors’ intellectual property is still theirs! You still need to cite to them for the ideas, even if you restate their results in your own words and your own notation.

**3. Preliminary results**

If you have already done exploratory work in developing your project, then you may have preliminary results to show. If so, they go here. If not, then you will not have this section.

**4. project plan**

You give your plan for doing the project here. There’s more than one way to do it. But a very useful way to do it is to make a list of tasks and milestones, then use that to make a Gantt chart (i.e., a “timeline”). Then you give the Gantt chart as a figure and the body of this section lists out the tasks and explains them, making reference to the Gantt chart.

“But how am I supposed to know what the exact tasks are going to be if I didn’t yet do the work,” you ask. Good question – and one that every young researcher asks the first time they have to write a proposal. Answer: make up a story and make it good! Make it believable and plausible. Do the best you can to anticipate what the tasks and milestones are going to be. Like a good abstract, writing this project plan is an art. Those who are good at it get the money for their group or their project. You make up the best plan you can and write it as though it were cast in stone. It will change for sure! But don’t worry about that – that is what progress reports and final reports are for!

**5. risks and contingencies**

Things will go wrong and usually it’s impossible to predict what they all will be. But you should invest some effort trying to think of what problems might come up and how you would handle them or modify your plan in response. Some simple examples are: there may be data that you would like to use, but what happens if the authors of the paper where you heard about it never respond to your email? What if an algorithm you planned on using doesn’t work as advertised or if it turns out to be too hard to implement and get working? If you are building hardware, what if a part you need turns out to be unavailable or too expensive? In managing a “real world” project, one thing I often say to myself is: “*have backup plans upon backup plans upon backup plans*.”

Another thing that is very useful is to plan your project in terms of a “safe option” and enhancements or added features. The safe option should be a baseline version of the project that can be completed without any significant risks. In other words, it’s “for sure” that you can get the baseline or “safe option” done and working no matter what happens. The safe option might not be fancy enough to get an *A* grade, but it’s *safe* and that’s the point. In this sense, the “safe option” or baseline project is like a worst-case fallback position. Then, in your mind, you organize the rest of your tasks in the “desired version” of the project into a series or collection of enhancements that can be added once the baseline project is working. The benefit of thinking of your project this way is that it helps to prioritize what absolutely has to get completed and working as fast as possible (the baseline version of the project) and gives you an “already worked out” plan for how to proceed and prioritize if problems cause you to start running out of time.

**5.1. Subheadings**

Subheadings should appear in lower case (initial word capitalized) in boldface.  They should start at the left margin on a separate line.

*5.1.1. Sub-subheadings*

Sub-subheadings, as in this paragraph, are discouraged. However, if you must use them, they should appear in lower case (initial word capitalized) and start at the left margin on a separate line, with paragraph text beginning on the following line.  They should be in italics.

**10. Conclusion**

The conclusion is the next-to-last part that you write – just before you write the abstract. Like the abstract, the conclusion is vitally important to whether or not your paper gets accepted and whether or not your proposal gets funded. In the conclusion, you must summarize and recapitulate what you presented in the main body, what was your original contribution, why is it significant, and the main points that you want your reader to “take away” after reading your paper. It’s also common to give brief descriptions of a few ideas for future work that might build on or extend what you described in the main body. Finally, salesmanship is just as important in the conclusion as it is in the abstract. Make sure to get your high-impact statements into the conclusion and portray your work in the best possible light. Like the abstract, people will often read the conclusion before they read the rest of your paper or proposal.

The conclusion can be challenging to write because, in a nutshell, it says the same things as the abstract and the same things as the main body of the paper, just in a slightly different way. You may feel like you have already expended a lot of effort to say these things in the best way you can in the main body and that makes it hard to see how to write these same ideas again in a slightly different way in the conclusion and the abstract. But in professional technical writing it’s very important to keep hitting on your main points over and over again – both because this will help the reader get and retain your main points and because people will often read just the conclusion, or just the abstract, or just spot read certain sections of the main body. After reading the conclusion, your audience should have a clear idea of what was the main point of your work, why it is important, and what were your main contributions.

For a proposal, whether it’s a DIP project proposal, a dissertation prospectus, or a “real” proposal to a funding agency, the conclusion should also make some statements about the expected outcomes of the proposed work. These may include both “performance oriented” outcomes such as: “as shown in the plan, this project will be completed on time and on budget” and “as discussed above, there are only a small number of conceivable risks and they are all manageable,” and technical outcomes such as “this project will provide unprecedented new solutions to the well-known problem of X” or “the new techniques developed in this project will provide important advantages including X, Y, and Z compared to the leading competing state-of-the-art methods.”

**11. References**

[1] A.B. Smith, C.D. Jones, and E.F. Roberts, “Article Title,” *Journal*, Publisher, Location, pp. 1-10, Date.

[2] Jones, C.D., A.B. Smith, and E.F. Roberts, *Book Title*, Publisher, Location, Date.