

# ***WRITING YOUR TECHNICAL PAPER***

## ***FIRST AND SECOND DRAFTS***

**Draft Due for Peer Review Workshop: June 30, 2016 at 9:00 AM**  
**Revised Draft Due on Blackboard: July 8, 2016 at 11:59 PM**

### **ASSIGNMENT SUBMISSION**

*You must have a draft of this assignment completed before Thursday, June 30, at 9 AM for the Peer Review Workshop.* Attendance is required for this workshop, which serves as the SURF PDS for that week. At the workshop, you will receive immediate feedback on your paper draft from other SURF students. **You must bring two printed copies of your paper draft for the peer review workshop, as well as a printed copy of your “Sample Paper” (see Instructions below).**

After the workshop, incorporate the feedback you received for your paper. Your mentor(s) should also review your paper draft and give feedback, which you must also incorporate into your draft *before* submitting it to SURF on Blackboard. After you have incorporated all feedback, **you must submit your completed draft on Blackboard as a Word or pdf file by Friday, July 8 at 11:59 PM. Use the file name structure LastName\_FirstName\_TechPaperDraft. You will also submit a pdf copy of your Sample Paper using the file name structure LastName\_FirstName\_SamplePaper.pdf.**

### **PURPOSE**

Documenting your work and sharing it with the research community is an essential part of the research process. Additionally, learning to write a professional quality technical paper in your field is a skill that must be mastered to be successful in a research position.

There are two primary objectives for this assignment. The first is for you to learn how to write a professional quality research paper in your field. The second is for you to provide your research group with a concise document that explains your summer work. Your paper should include enough information and detail for someone in your research lab to reproduce and build from your work. If your work is not carefully documented, it will likely be forgotten!

At this point in your education, we expect that you already know the general techniques for writing a technical document; however, all conference and journal papers have their own specific styles and formats (although many are similar within a research field). By following the format and style of a conference or journal paper appropriate for your research topic, you will learn how to write a professional-quality technical paper specific to your field. In fact, you should discuss with your professor the possibility of submitting your paper to a technical conference or journal! (The final version of your paper will be due at the end of SURF, on Monday, August 8.)

### **INSTRUCTIONS**

#### **Task 1: Find a Sample Paper**

Using Google Scholar, Web of Science, Purdue Libraries, etc., find a published paper written in the conference or journal format that you and your professor have chosen. (See the note below.) We will refer to the paper you find as your “Sample Paper.” It is most helpful if the topic of your Sample Paper is similar to your own project. You may of course use a paper that you have already found in doing your literature review.

You will use the Sample Paper as a guide when writing your own technical paper draft, with regards to writing style, paper structure (e.g. section titles, order, content, etc.), and format (e.g. in-text citations, full citations in References section, fonts, text size, etc.).

**You must print a copy of your Sample Paper and bring it with you to the Peer Review Workshop on Thursday, June 30 at 9AM. You will also submit an electronic copy on Blackboard by Friday, July 8 at 11:59 PM.**

**Note:** The format preferred by your professor should have been determined when completing the SURF assignment “Week 5–11 Research Plan,” where you met with your professor to evaluate your research progress. If you are uncertain about the correct format to use for your paper, talk to your professor immediately to determine which format they prefer, and write your report in that format.

## Task 2: Write Your Technical Paper Draft

Using your Sample Paper as a guide, complete a draft of your technical paper for the research you have conducted so far in SURF. **In this draft, you must include your title and author list and complete the sections: Abstract, Introduction, Methods, and References. (See the section descriptions below.)** It is expected at this time in SURF that many of you will not have obtained your results yet. Therefore, for your draft in this assignment, completion of the Results, Discussion, and Conclusion sections is optional.

Your draft should be **at least 1,500 words long**, and should **include figures, tables, images, etc. wherever appropriate**. Your paper must **tell a story**, and should contain enough information for someone else to reproduce your work. Although the specific format you follow will vary depending on your chosen conference or journal format, it will likely contain (in some form or another) the following sections:

### Title and Author List

- Be sure to discuss your title with your mentors. Your title should be clear, descriptive of your project, and concise. Since this paper is targeted for a conference or journal in your field, it is acceptable (and recommended) to use common technical terms specific to your field. The length of a good research title can vary, but it should not exceed about 20 words.  
**Note:** Your paper title should be technical and field-specific, and will therefore likely differ from the title you used for your abstract (1<sup>st</sup> draft) assignment in Week 5 (which is targeted for a general technical audience).
- Your author list should also be discussed with your professor. Your name will most likely be listed as the first author, and your mentors as co-authors, but again, defer to your professor's preference. Anyone who has significantly helped you for your project may also be listed as a co-author. Someone who only helped you a little may instead be mentioned in the Acknowledgements section. (Again, discuss with your professor.)

### Abstract

- The abstract for your technical paper should be very similar to what you wrote for your abstract (1<sup>st</sup> draft) assignment in Week 5. Update the abstract in your paper with your most recent work, and any feedback you've received since you submitted your first draft. Additionally, since the abstract you write in this technical paper is written for a conference or journal in your field, you should modify it for an audience of others in your field (i.e. make it concise by using common, field-specific terms and concepts).

### Introduction

- May include the motivation for your work
- May contain your literature review (which you've already written). In some journal and conference formats, the literature review is in its own section.

- Any additional background that will help the readers to understand your research work. Explanations about the experiment setup and methods or tools used in your research typically belong in your Methods section.

#### Methods

- In short, this section is about explaining what you did to get your results.
- Discuss the methods, techniques, and materials used. The experimental setup (if applicable). The software used (including functions and algorithms written), and any other tools (e.g. key equations, graphical methods, etc.) that you used to obtain and/or analyze your results.  
**Note:** You do not need to give descriptions for tools or software that are very commonly used. E.g. you would not need to explain MATLAB or Excel; however, if you used or wrote complex (or less commonly known) functions, you may need to describe how those functions work.

#### Results

- State your results. Use figures and tables wherever appropriate (e.g. whenever a concept or result is made clearer with a figure or table).

#### Discussion

- Explain and discuss your results. (Tell a story!) You should be walking your reader through your results in a clear and logical way that leads up to how you reached your key research conclusions. You typically do not state the actual conclusions themselves in the Discussion section (unless it's combined with the Conclusions section).
- Depending on the conference/journal format used, the Discussion section may be included in the Results section, or possibly the Conclusion section.

#### Conclusions

- State the conclusions of your study. Answer your research question/hypothesis.
- Some journal/conference papers begin this section with a brief summary of your research project

#### Acknowledgements (Optional)

- Thank anyone who helped you in this project that is not already a co-author on your paper. Any organization that contributed to the funding of the work should also be acknowledged. (As stated earlier, your mentors, and anyone who contributed significantly to help you on your project, should all be listed as co-authors.) Be sure to discuss with your professor who (if anyone) you should acknowledge, and who to include in your author list.

#### References

- List your references using the appropriate conference/journal format (or other format specified by your professor). **All listed references must have at least one corresponding in-text citation** (likely in the Introduction or Methods sections). Be sure to use the in-text citation format appropriate for your chosen conference/journal.

**Note:** Although your paper should include the above listed sections, the specific format you're following may not use the same section titles (e.g. Introduction, Methods, etc.). Feel free to give your sections titles that are most appropriate for your chosen conference or journal format.

This technical paper will be your research lab's primary reference for all of your summer research. Therefore, any questions regarding content and format should be first directed to your graduate mentor and/or professor. Of course, your SURF GA is happy to help you as well!

#### Task 3: Mentor Check

Have your mentor review your paper draft and then incorporate their feedback into your paper *before* submitting your draft on Blackboard. At the end of your paper draft (i.e. after the References section), include a summary of the feedback you received from your mentor in a section titled "Mentor Check."