Spring 2013 Research Methods in Computer Science

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After I graded the first three assignments in 2013, I emailed comments to the students about problems I identified in the papers. Below are edited versions of those comments.

Comments on Assignments 1 and 2

The most significant shortcoming of a typical submitted paper is lack of focus on one key idea (at some level of abstraction).

The papers in this course are short papers. A paper should focus on an idea that you want the reader to remember. (Of course, this idea may be abstract, with a few aspects.) You should introduce the idea at the beginning, reinforce it throughout the body, and then restate it at the end. You should avoid introducing clutter—any unnecessary detail that gets in the way of the idea. The narrative should flow smoothly from beginning to end. The individual paragraphs should be cohesive and coherent (as discussed in class) to convey the aspects of your idea.

The purpose of the first assignment was to tell an interesting story about the computer scientist that you interviewed. It was not merely to give a biography of the individual or report on the questions you asked and the responses the individual gave.

The purpose of the second assignment was to present ideas from one of three different seminar presentations. Many students submitted chronological descriptions of a presentation. Those are boring! Such a paper likely has no take-away point—nothing that the reader will remember.

Consider the presentation by the FedEx employees. This presentation had several loosely connected parts. You should not try to cover all the diverse aspects of what the presenters said and did—unless you can come up with a theme to tie all the parts together. Possible themes are marketing yourself, practicing good communication skills, developing an effective resume, or preparing for a successful interview.

You could use Gabrielle Dycus's trivia game in a "good communication skills" theme. She used her communication skills to introduce her company in an interesting way—engaging the audience in her words using a game and prizes.

Also, some students were careless in giving the names of the speakers—giving no names, no first names, incorrect or misspelled names, incorrect titles or degrees, and so forth. Xuan Liu, who has an MS from this Department, would probably appreciate the PhD that one writer credited to him. However, Ms. Gabrielle Dycus probably would not appreciate being called Mr. Dycus.

If you reference other works in your papers, you must provide appropriate citations and quotations. The words you submit in a paper must be your own, as we have discussed in class.

Comments on Assignment 3

For assignment 3 you were to write a "how-to" (or process) paper that describes how to carry out some task or process or use a particular computing technology.

Nature of paper. The assignment did not ask you to write on how something works but, instead, to write instructions that tell someone how to do something. That is, you were to write a tutorial.

Person. In many cases for this assignment, you can use second person—by that, I mean to use the pronoun "you" or (more often) sentences with "you" as the implied subject. Generally speaking, use of second person is not acceptable in the other papers that we write in this course. Sometimes, use of first person plural is a good approach—that is, to use "we" where "we" means "the readers and the authors together."

Voice. You should write mostly in active voice (as we have discussed in class). However, remember that passive voice can help maintain cohesion of the paragraphs or emphasize what was acted upon rather than the actor. The papers for this assignment that were written in third person often relied on awkward and indirectly stated passive sentences.

Audience. The audience for your paper was to be either (a) other graduate students and the faculty in the Department of Computer and Information Science or (b) members of the general public.

In a paper (especially a tutorial paper), you need to write for a well-defined audience. In many of the papers submitted for this assignment, it was not clear to whom the author was writing. Some authors assumed extensive knowledge of various topics—such as how networking works in Linux, how wireless sensors work, or how a specific artificial intelligence algorithm works. These authors assumed more specific knowledge than a typical graduate student or faculty member will have and much more knowledge than a member of the computer literate public would have. The author did not state these assumptions. The author did not define or explain enough of these assumed aspects for the reader to understand the text.

Scope. The paper was to be 500-1000 words. Your paper might be two pages long if it is formatted with a small font in long, single-spaced paragraphs without much white space. If you use a larger font or spacing, many short paragraphs, or white space around figures, equations, code fragments, or quotes, then your page length will be longer. In general, you should use short paragraphs, examples, figures, and white space in tutorial writing. You should define the scope (what you cover and what you do not) for your paper such that you can give sufficient details and fit them within the budgeted length.

The scope of some of the submitted papers was too broad to be covered within the desired number of words. The result was either insufficient detail or a longer than desired paper.

Paper structure. The papers we write should have an interesting narrative (story) that flows smoothly from the introduction through the body to the conclusion. This paper is not an exception. Some papers did not introduce the key idea in the introduction (instead relying on the title alone to do that). Many papers had bodies that were choppy, relying too much on numbered or bulleted lists. Many papers really did not have a conclusion; they just stopped.

Bulleted or numbered lists or definition style lists are helpful in tutorials. But if the paper uses them in every section, then they those their effectiveness and inhibit the paper flow. Any list should have a lead-in sentence or paragraph to explain the context and content of the list. The list should be parallel in structure.

Citations. As in any piece of writing, a how-to paper should cite its sources and use appropriate quotation.