CS 530 Advanced Algorithm Design and Analysis
Term Paper Specification
(Up to 3 students per team)

(Proposal Due: 10/11)
(Term Paper Due: 12/1)

The purpose of this assignment is for you to learn as a team about the design and analysis of an algorithm, which is not typically discussed in an undergraduate course on algorithms and will not be covered in this course. One of the best ways to learn something is to be required to explain it to someone else; that's what this writing assignment accomplishes.

How to proceed? First, find journal articles that are interesting and readable. The course syllabus provided a short list of referred periodicals. However, your library research should not be limited to those referred periodicals. This is a crucial step in the process; a poor choice of topic can make the rest of the term paper process very painful. Don't be hesitate to consider several sources before you find an algorithm that is both of interest to you and intelligible to you.

When you have selected a reference you may end your library research and write your paper based on the reference(s) you have identified. You may follow the following recommended format to organize the paper.

Term paper proposal format:

You are required to submit a typed proposal, consisting of (1) the title of the topic, (2) your names and email addresses, (3) a brief description (one or two paragraphs) of the topic, and (4) five main references to recent books or articles you plan to use. Web links can be used as references, however at least three references should be a book or a technical article. The proposal can be in bullet or paragraph format. The length of the proposal should be one page, double spaced.

Term paper format:

Length: Among 30 to 39 pages (for each student: 10 to 13 pages). Your report should be typed on 8.5 x 11 inches white paper, double-spaced.

Contents: At least (not limited) to the following: (You may select your own style of writing as long as it composes a complete technical paper.)

0. An excellent title

1. Abstract

2. Introduction and/or Motivation: In learning the algorithm, you are really learning two things: the problem that the algorithm is designed to solve; and the particular solution provided by the algorithm. Your paper should discuss both of these things.

3. Algorithm Description: You should present the studied algorithm(s) for the problem or discuss some algorithm design technique not covered in class, giving examples of algorithms employing this technique.

4. Algorithm Analysis: You should discuss the complexity of the algorithm to the extent that you are able, and also explain the running time function if you can.

5. Discussions: Improvement, comments, or suggestions to the algorithm(s) you have described.

6. Conclusion

7. References: List all the related references using the department's standard bibliographic and reference style. Also attach a copy of your main reference(s) that is/are the source of your algorithm and/or algorithm analysis.

Term paper evaluation criteria:

1. (10%) Title and Abstract: Was the title appropriate? Was the abstract a good summary of the paper?
2. (30%) Readability and Organization: Were there any grammar and/or spelling errors? Were complete sentences used? Were the sentences concise and clear? Were the paragraphs, sections, and the whole paper well organized? Did you present the information so that your reader could understand without going to the original source?
3. (35%) Technical quality: Was it clear to me that you understood the paper you were summarizing? Was your coverage of the paper reasonably complete? Were the techniques you used to design and analyze the algorithm appropriate, efficient?
4. (15%) Adequate references: Was the specified form followed? Did you refer to the bibliography as appropriate throughout your text?
5. (10%) Adequate length: Was there any sections that could be shortened or extended?

Extra credit (up to 5%) will be given to the originality and significance.

Term paper presentation:

Length of the presentation is 42 minutes (for each student: 14 minutes), followed by 3 minutes discussion session where the participants will ask questions and discuss the topic. Presentations use MS-PowerPoint.

Each presentation will be evaluated by all participants and evaluations forms will be provided.