

CogSci 109 Fall 2007 Assignment 5 : Improving
communication using modeling and data analysis
methods

(55 points total)

Due Monday Nov. 26, 2007

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November 18, 2007

1 Description

Please read this entire document before attempting the homework...

This assignment is worth 55 points, and a 5 point extra credit will be possible! It is due Monday Nov 26, 2007, but if you turn it in by Wed, Nov. 21, 2007 you automatically receive the 5 bonus points!!!

This is a brief assignment. In this assignment you will search for a paper related to your interests within the field of Cognitive Science. After reading the paper, you will perform a critique of some points of form, then briefly discuss the application of specific techniques from this class. Finally, you will give suggestions for how the application of these techniques could be improved (i.e. improved color combinations, better visualization figures, use of nonlinear least squares instead of linear, inclusion of more appropriate statistics other than just mean or variance, etc).

2 Format (5 points total)

As usual, this will follow the standard report format from this class. Formatting requirements:

- The entire assignment must be 500 words or less (1.5 pages). Figures may add space (and thus push the printout to more than 1.5 pages), but without figures the assignment must be 1.5 pages or less. Try to be clear and concise - quantity does not equal quality! (1 pt)
- Create a cover page with your name, the date, class, quarter, your section, and the homework number/title (1 pts.)
- Pages must be numbered (1pt.)
- You may (and are encouraged to) recycle printer paper which has been printed on only one side IF what is on the back does not bleed through to the front or in any way interfere with your assignment. Also the material on the reverse side should be clearly unrelated to this assignment to avoid confusion. You may also use double-sided printing to save paper (1 pt.)
- You may NOT use lined paper (such as from a binder or college ruled paper) (1 pt.)

3 Instructions and questions (50 points total)

3.1 Find and select a scientific paper

Using a scientific database such as iee.org, the UCSD libraries, journal of neuroscience, jstor.org, googlescholar, or another of your choosing, select a scientific paper which has been published in a reputable journal or conference, and includes material in a central manner from one or more topics of this course. Look for a paper where you can see room for improvement regarding material from this course you have learned.

- The paper must be a minimum of five pages
- The paper must be published, accepted for publication, or under review.

3.2 Email the paper (10 points)

Email the paper to Alex (if the filesize is too large, let Alex know over email or in person and we'll arrange appropriate alternatives)

3.3 Form critique (10 points)

Proper form in publication is important in order for clear communication and dissemination of information. Critique the paper you selected by briefly commenting on the following points. If the paper has no figures, then those points will be part of the flow of content point. How might these points be improved in the paper you selected?

- Grammatical form (2 points)
- Figures (2 points)
- Color selection/contrast/etc (2 points)
- Flow of content - are the concepts developed clearly and properly? Does it start with an initial question, hypothesis, statement, or subject topic, then move on to develop the methods, concepts, data and results, and then conclude with a clear statement tying together the rest of the paper? Is there a bibliography? (4 points)

3.4 Discuss the application of topics (20 points)

Choose TWO of the topics that we have covered in this course (visualization, statistical analysis, error analysis, least squares fits, interpolation/extrapolation, color theory, etc), and discuss in less 100 words how the selected paper applies those techniques to communicate some scientific results, concepts, etc. (10 points per topic)

3.5 Improvement (10 points)

Choose one of the topics from (3.4). Briefly discuss (in less than 100 words) how the authors could have clarified their point or improved how they applied the concept you commented on in (3.4). If it would have been more appropriate to apply a different method/concept, what would it be? You may use figures, sketches (if done on the computer, or very neatly), and/or tables to help make your points. Any figures, sketches, or tables must be properly labeled and referenced in your write-up. Recall, for example, the lecture given on color theory, in which we discussed the map of the USA displaying data by region. We considered its strengths and weaknesses, and how the figure could be improved.

—————END OF HOMEWORK—————