395T Visual Recognition, Fall 2012
Course projects

Guidelines

A project can be any of the following:

- an extension to one of the techniques studied in class
- an in-depth analysis and empirical evaluation of one or two related techniques
- design of a novel approach and accompanying experiments
- a thorough survey paper

The topic must be relevant to one or more papers on the syllabus, and have a recognition/learning component. Keep in mind, that is more specific than a project that has a computer vision component. Students should work in pairs (minus the survey option).

Important deadlines:

Wed Oct 17:	Proposal abstracts due
Wed Oct 31:	Proposal update and extended outline due
Friday Dec 7:	Final papers due, in-class presentations

Proposal abstract (due Wed Oct 17)

Brief overview (1 paragraph to 1 page) of what you'd like to address. Be as specific as possible in terms of the problem and potential approach. If at this point you know only the basic area you'd like to explore, describe what aspects interest you. Check out the class syllabus to get ideas; it may be useful to look both at some unassigned papers on topics that we've already covered, and definitely to look ahead to the topics we'll cover in coming weeks. During the window between Oct 17 and Oct 31, I will give feedback and pointers based on this abstract.

Proposal extended outline (due Wed Oct 31)

The proposal should describe the goal of the project, survey relevant literature, and plot out what kind of implementations and experiments will be needed to complete it. Provide as much detail as possible. Submit the proposal as a pdf via email.

- **Summarize** the problem and main idea of the project.

- **Overview relevant related work**. Do a literature search. Depending on your project choice, the relevant work is not necessarily limited to papers on our

syllabus. Include details on the related papers in the proposal, and compare and contrast the approaches and what you will do.

- **Technical plan**: What representation(s) and algorithm(s) will you explore? Describe how you will incorporate existing techniques. Or, if you are proposing a new approach, what is the basic idea?

- **Experimental plan**: What experiments will you run to evaluate the idea? What language, libraries, software do you intend to use? Will the experiments show off certain properties of the algorithm? Will they involve a direct comparison with an alternate technique? Give a detailed outline.

- **Sources of data** you will use: Is there an existing image database that is relevant? Will you need to collect new images? If so, how will you do it?

- **Partner plan**: How will you share the work this project involves? You do not need to write a list of divided tasks. But, you should give evidence that you have discussed how you will both contribute.

- **Results thus far**: Summarize any results so far.

- **Speculate** on what will come out of this project. Do you have a hypothesis about the results? What is most unclear about the project plan at this point?

Project papers (due Friday Dec 7)

Please submit as pdf via email. The content of the project paper should address all of the following in detail:

- **Abstract.** Summarize the problem and main idea of the project. Include a very brief description of the main result.

- **Background and related work**. Provide a thorough description of the background material. Compare and contrast the most related work with your approach. Depending on your project choice, the relevant work is not necessarily limited to papers on our syllabus. This is an important part of the paper; please include all relevant details.

- **Technical approach.** What representations and algorithms did you explore? Describe existing techniques you employed, and/or any new ideas you have proposed. Describe the method's input and output clearly, and directly state any assumptions you have made. The description of technical details should be self-contained, and essentially should not require referencing outside sources for your points to be clear. Give enough detail that another student in our class would be able to read your paper and implement your approach, with confidence that he/she was following your procedure very closely.

- **Experimental results.** What experiments did you run to evaluate the idea? What is the main purpose of each experiment, and what can you conclude from the results? Can you make any comparisons with alternative approaches? Provide figures and examples as appropriate. Also comment briefly on what software, libraries, datasets, etc. you used. The analysis and your interpretation of the results are most important for this part of the paper. Be sure to answer not only what you did, but also why, and what the outcomes indicate.

- **Conclusions.** Summarize your approach and experimental findings.

- **Future work.** What are natural next steps if you were to proceed along this direction of research? What questions are not fully answered by your experiments?

Please use this Latex template to make the document.

http://cvl.umiacs.umd.edu/conferences/cvpr2010/authorkit/cvpr2010AuthorKit.tgz

How long should the paper be? That will of course depend on your project, the amount of necessary figures, etc. On average I would expect 8 to 10 pages to be about right when using the templates above, and more if there are a lot of image examples/figures.

Evaluation

The project paper, presentation, and proposal together account for 20% of the course grade. Papers and in-class presentations on the work will be evaluated on the following aspects:

- Organization and clarity
- Experimental design
- Analysis of the results, discussion in paper
- Coverage of related work
- Creativity