381V Visual Recognition, Fall 2017
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

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.

Important deadlines:

Wed Oct 25:	Project proposal due
Tues Nov 28:	Poster due for printing to UTCS OEA
Wed Dec 6:	Poster presentation in class
Fri Dec 8:	Final papers due

Proposals (due Wed Oct 25)

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

- **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 assigned 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? What existing implementations can you draw on?

- **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/video? 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, if relevant.

- **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?

Note that topics anywhere on the syllabus are fair game, including those in later weeks of the course. The course webpage also has many relevant pointers for datasets and supplementary reading.

Project poster (submit to print by Nov 28, present Dec 6)

For the final in-class presentations of your project, we will be having a poster session. The goal is to have an interactive forum to learn about all the other projects in the class. Our poster session is on Wed Dec 6, during our regular class time.

Poster content

Each project team should prepare one poster. A good poster will convey the main ideas and results of your project, loosely following the structure of a typical paper (below). In other words:

- problem statement, and briefly why important
- main idea of approach
- very briefly, what related methods do and/or how they fall short
- approach major steps (eliminate less important details)
- results overview and punchlines

Try to use minimal text, and plenty of visual explanations. The poster does not need to contain every point that will appear in your final paper (and probably it should not). Think of the poster as a visual aid to help your verbal delivery of the content.

Here are a few examples of posters you might follow as examples:

- http://vision.eeninja.com/papers/iccv15/aron-iccv15-poster.pdf
- http://www.cs.utexas.edu/~grauman/papers/aron-nips14-poster.pdf
- http://vision.cs.utexas.edu/projects/infering_unseen_views_of_people/inferring-unseen-views-of-people-poster.pdf
- http://vision.cs.utexas.edu/projects/egocentric/story/egocentric_cvpr2013_poster.pdf

When preparing for your verbal delivery, be sure to think about the ~2-5 minute elevator-style pitch, as well as the slightly more elaborate explanation. You can expect a visitor to spend 5-12 minutes at your poster.

Printing your poster

The department can print your poster for free, provided you comply with their time window requirements. Details are here:

https://www.cs.utexas.edu/facilities/poster-help

Please select rigid mount so that we can place the poster easily on an easel (provided).

The deadline for submitting your file to OEA is **Tues Nov 28**.

Please be respectful of their deadlines to ensure that your poster can be printed in time. Of course, you may print your poster elsewhere, such as Kinko's, on your own timeline so long as it's ready for Wed Nov 30 at 1 pm. However, this is *very* expensive (at least $100 typically) and the department cannot reimburse you. So I would definitely take advantage of OEA.

Project papers (due Fri Dec 8)

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?

*Keep in mind that the project paper is the most thorough presentation of your work to the instructor. That is, the writeup is the most important final product, resulting from all the behind-the-scenes work you do on coding, experimentation, and analyzing your experiments. So, please strive for a polished, clearly written document with informative illustrative figures, carefully composed experimental results, and thoughtfully organized related work.

How long should the paper be? That really just depends 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 template below, and more if there are a lot of image examples/figures.

http://www.pamitc.org/cvpr15/files/cvpr2015AuthorKit.tgz

Evaluation

The project paper, presentation, and proposal together account for 25% 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