Final Project: Your Own Project

Class Presentations: last week of class, March 12-13, in class
Peer Review Due: Saturday, March 14, 12 noon
Final Report Due: Friday, March 20, 12 noon

The last assignment is to do a project based on an area of Computer Vision of your choice. You can check online resources and journals and conference proceedings for ideas, e.g. *IEEE Transactions on Image Processing*, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, *IEEE Transactions on Systems, Man, and Cybernetics*, *International Journal of Computer Vision*, and *IEE Proceedings – Vision, Image, and Signal Processing*. You can also check previous student projects from this class on PolyLearn or online for ideas.

A project will typically involve reading some technical papers from the literature, implementing some method(s), experimentally testing the method(s) on appropriate images, extending the previous work by adding your own original work, and writing a report that describes the problem, the approach implemented, a summary of experiments, and evaluation of results.

Report: The report should be 15-20 pages (excluding the code) long with the following sections:

- Team name, participant names, and title.
- Introduction, motivation and problem statement. Be sure to state clearly any assumptions about images, environment, lighting, etc. Describe your data sets.
- Discussion of previous/relevant work from the literature.
- Description of your approach, algorithms and implementation details. You are allowed to use existing code for known methods. But you should show significant amount of work of your own to make things work. Include a clear description of assumptions of the method and a list of all the parameters that must be specified by the user.
- Analysis of the experimental results – How well did your approach work? What is the limitation of your method. What issues did you encounter? How did you address them? What should be done differently or carried further if you were to do more work on this problem?
- Summary of the work and concluding remarks.
- References
- Attach a printout of your well-documented code to the report. Be sure to clearly state what parts of your code you wrote yourself and which parts you got from elsewhere. Document how to produce your results.

The report will be graded based on: quality, degree of difficulty of work, analytical or experimental results, clarity of presentation and depth of understanding displayed.

Presentation: During the last week of class, each team will give an oral presentation of the project and answer questions from the audience. Twelve presentations will be on Thursday and three on Friday. Each presentation should be about 12-14 minutes long, the presentation should be divided among team members.

Peer review: One presentation will be randomly assigned to each student for peer review. The goal for the peer review process is to learn to critically evaluate the work of others and obtain detailed feedback about your own work. The review report should be at least 400 words per project and discuss its quality, significance, and presentation, as well as its limitations. The reports will be graded and are not the basis for grading of the reviewed project. Report will be anonymized and forwarded to the project team.

Grading:

Report: 80%, Presentation: 15%, Peer review: 5%.

Deadlines:

- Submission of your one paragraph project proposal (topic, motivation, data to be used) in email (to jzhang@calpoly.edu) titled "CPE 428 Final Project Proposal" by March 5. The team who submits first gets to choose the time slot to present.
- Submission of **presentation slides** to PolyLearn**:** 11:59 PM the night before presentation.
- **Classroom presentation**: last week of class, March 12-13.
- Submission of **individual peer reviews** (only electronic file in WORD or text file) to PolyLearn: by March 14 (Saturday) noon.
- Submission of your **report** (one per group) to PolyLearn: March 20 (Friday) 12 noon.

Some ideas:

- Strawberry Detection (I will provide the dataset)
- Fruits detection (Fruits 360 dataset)
- Resistor Recognition
- Target identification in crowded scene
- Vision-based parking space detection
- Credit card segmentation and alignment
- Traffic Sign Detection
- License Plate Recognition
- Rubiks Cube Identification
- Gesture recognition Using Kinect (you can borrow the Kinect from me)
- Something that may help in your thesis/research project
- ….