

B657 Project 3: Object Recognition

Due: Tuesday April 1st before class.

In this assignment, you will get a chance to try applying what you have learned thus far to a slightly larger scale problem. You are to build an object recognition system and test your system using Columbia object library <http://www1.cs.columbia.edu/CAVE/software/softlib/coil-100.php>.

The goal:

The goal of this assignment is to give you some experience at developing a vision system, and in particular to make the system work on a large dataset. One of the essential things to learn in this exercise is how to separate algorithm development and testing from algorithm evaluation. That is, the first step is to make sure that you have an algorithm that really works in the circumstances it was designed for. To this end, you will first develop and test your algorithms on a small dataset before moving on a large dataset. Moreover, as this is a more extensive project, I'd like to see a more formal discussion of your results.

The requirement:

- You can work together with up to two peers.
- You should report your results of recognizing 5, 10, 30, 50 and 100 objects.
- You should cross-validate your results in two conditions (e.g. 50%-50% and 20%-80%).
- You should report individual efforts in the project (who implements which parts, etc.)
- You will need to write a formal report to describe the performance of your program, analyze the results and discuss possible improvement.

Suggested approach:

- You can try various kinds of features, such as color, shape and texture.
- You can use PCA or some other dimension reduction techniques to transform the feature space.
- You can use boosting to improve weak learners.
- You are free to use any ideas from the papers we studied in class.
- You are free to explore any techniques and algorithms.

You should submit your code and a report of your results. You will need to put your turn-in package on slashtmp and send a link to chenyu@indiana.edu.