Catalog Description
An introduction to the principles and practice of digital libraries. Algorithms are drawn from computer vision, pattern recognition, image processing, and document processing. Topics include low-level image processing, texture, color constancy, shape from X, supervised and unsupervised training, and implementation issues regarding content based multimedia database. Programming assignments will be implemented in C++, Java or other general purpose programming languages.

Course Outcomes
1. Knowledge of basic image processing techniques
2. Knowledge of fundamental computer vision methods
3. Knowledge of essential pattern recognition procedures
4. Knowledge of effective data compression
5. Knowledge of efficient multimedia data organization and query processing

Topics
1. overview of digital library and mathematical background
2. data compression schemes
3. binary image processing and pattern representation
4. feature detection
5. contours and Hough transform
6. texture and shading
7. various invariant functions (Midterm)
8. color recognition and indexing
9. supervised, semi-supervised and unsupervised learning
10. object recognition
11. motion estimation and tracking
12. video segmentation and indexing

Grading
Quiz: 15%, Assignment: 10%  Midterm: 25%, Team project: 15%, Final: 35%.

Textbook/Reference

Office hours
MW 2:00—3:00pm, Nac 8/209

Course website
http://www-cs.ccny.cuny.edu/~csjie/479.html