# Course Project Proposal

**2-Page** Proposal

This proposal will describe a computer vision topic that you choose for the course project (for CSC 249, there is a bonus of up to 5 points for doing the same amount of work).

**1. Topic/Paper Selection**

1. For any topic or problem, you always start with a review of the literature to find out what has been done, what works, and what does not work. Papers may be selected from refereed journals or Conference Proceedings (more up to date). You should compile and review a short list of most relevant papers. A good place to start is <http://www.cs.cmu.edu/~cil/vision.html> or <http://www.citeseer.com/>, or you can simply Google with relevant key words.
2. A list of suggested topics for the final course project includes (*but not limited to*):
3. **Mind/Mood reading (vision + cursor activities): smile/frown/focused/distracted**
4. **Are U Healthy? body mass index and height prediction from face images**
5. Color image segmentation (K-means, Normalized Cut, **Adaptive K-means**, etc.)
6. ***Minority Report* style: air touch screen**
7. **Face detection and tracking from a webcam (gesture cam / simple HCI or games)**
8. Face/object detection/recognition (template matching, bag of visual words, etc.)
9. Scene classification (low-level features, spatial pyramid, graphical models, etc.)
10. Web image retrieval using keywords and visual features (to improve relevance)
11. Material classification: build and test a method to classify images of materials (plastic, fur, concrete, wood, grass, leather, fabric, and so on)
12. **Tracking based on color and shape (e.g., faces, toy trains)**
13. **Eye blink/gaze and head movement analysis (frequency measure, abnormal detection)**
14. Action recognition from video
15. **Medical image/video segmentation and analysis**
16. **3D reconstruction from multiple 2D captures (e.g., multiple snapshots, time series)**
17. **Multiview visual search (object recognition) on mobile devices**
18. Image sentiment classification
19. **Caricature/cartoon vs. photograph classification**
20. Image inpainting and photo repair
21. **Image forensic and authentification**
22. Other (discuss with the Instructor)

**2. Proposal**

1. The 2-page proposal should summarize the papers and outline your project plan (e.g., problem statement, data acquisition, algorithm choices/ideas, experiment design, and performance evaluation). It will naturally become the introduction of your project report.
2. The proposal may contain a 1-2 figures.
3. The following sections should be included in the *final* **project report**:
4. Introduction: Background, problem statement, and problem importance
5. Methods: Algorithms and other methods used to solve the problem
6. Results: Major results and their implications
7. Critical Evaluation: Comments on the methods used and the major results. Advantages and disadvantages of the methods used. Discussion on alternative methods that may be considered for future work.