

# Course Outline

## SYDE 677 – Computer Vision (Fall 2011)

### Course Description

This course introduces the fundamental concepts for computer vision which include conventional topics such as sensing and image formation; early processing; image segmentation, 2-D and 3-D shape representation, analysis and synthesis; recognition and location of objects; automated visual inspection; robotic vision. The application of machine intelligence technologies for developing innovative computer vision algorithms will be a major focal point of the course.

### Instructor

Prof. Hamid R. Tizhoosh  
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### Lectures

Lecture Day: Tuesdays, 1:30PM — 4:20PM  
Location: E5 6002

### Marking scheme

#### 1. Interim Report (10%)

Deadline Oct 25, 2011

One page (PDF emailed to the instructor): Name, ID, Title, Problem description, Approach, Justification (at least 3 pages about your project OR a topic within CV)

#### 2. Class Contribution (10%)

10-15 minutes presentation, start of presentations: end of October

#### 3. Final Exam (20%)

10-20 questions related to lectures

(exam may be held during one of the last lectures)

#### 4. Project (60%)

Deadline: December 20, 2011 (midnight)

Source code: 5%, topic difficulty: 10%, Journal paper: 55%

[Journal Paper: Format - 2%, Organization - 3%, Background review - 5%, Novelty - 10%, Technical soundness - 5%, Results - 25%, References - 5%]

## Lecture Topics

Week/Date	Lecture Topic
1. Sep 13, 2011	Introduction, Light and sensors
2. Sep 20, 2011	Early vision (Filters)
3. Sep 27, 2011	Guest Lecture
4. Oct 4, 2011	Guest Lecture
5. Oct 11, 2011	Early vision (edges & textures)
6. Oct 18, 2011	Early vision (multiple views)
7. Oct 15, 2011	Mid-level vision (segmentation)
8. Nov 1, 2011	Mid-level vision (segmentation)
9. Nov 8, 2011	High-level vision (geometric methods)
10. Nov 15, 2011	High-level vision (Recognition)
11. Nov 22, 2011	High-level vision (Soft Computing)
12. Nov 29, 2011	High-level vision (Soft Computing)

## Textbook (Recommended)

Machine Vision: Theory, Algorithms, Practicalities

[E. R. Davies](#) (Author)

ISBN:0122060938

Morgan Kaufmann Publishers Inc.

San Francisco, CA, USA

## Project Consultation Day

**Date:** TBA

**Time:** 1:00pm-6:00pm

**Location:** Instrucur's office

**Description:** The consultation office hours will be held short before project submission day (Dec 20). Students should come with a printed copy of their project paper to get advice before final submission.