# Computer Vision

## RECOMMENDED TEXTBOOKS

Emanuele Trucco and Alessandro Verri. *Introductory Techniques for 3-D Computer Vision.* Prentice Hall 1998. ISBN: 0-13-261108-2H.

David A. Forsyth and Jean Ponce. *Computer Vision: a Modern Approach*. Prentice Hall 2002. ISBN: 0-13-085198-1

# Lecture Plan

## TOPIC: IMAGE FORMATION

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|---|---|---|
| Week 1 | 16. April | Introduction to Computer Vision<br>Administrative Information<br>Geometric Image Formation<br>Radiometry |
| Week 2 | 23. April | Radiometry - continued<br>Projection<br>Coordinate Systems<br>Digital Camera Capture |

## TOPIC: IMAGE FEATURES

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|---|---|---|
| Week 3 | 30. April | Noisy Sensors<br>Convolution<br>Smoothing |
| | No lecture 01.05.12 | |
| Week 4 | 7. May | Edge Detection<br>Multi-resolution Analysis |
| Week 5 | 14. May | Texture Filters<br>Texture Synthesis<br>Shape from Texture |
| Week 6 | 21. May | Color |

Week 7  28. May

<span style="color:red">No lecture 28.05.12 and 29.05.12</span>

Week 8  4. June     Hough Transform
               Deformable Models


## TOPIC: MULTIPLE IMAGES

Week 9  11. June     Basic Binocular Stereo Setup
               Correspondence Problem
               Triangulation
               Structured Light

Week 10  18. June     Epipolar Geometry
               Basic Introduction to Motion Analysis
               Optical Flow
               Motion Field

Week 11  25. June     Optical Flow, Motion Field
               Differential Method
               Kalman Filtering


Week 12  2. July     Kalman Filtering - continued
               Particle Filtering


Week 13  9. July     Particle Filtering - continued
               SIFT Features

Week 14  16. July     Building Rome in a Day
               Review