CSE 577
Image and Video Analysis

• Motion Analysis

• Object Recognition

• Event Recognition
What is motion analysis?

Objectives:
• Detecting moving objects
• Tracking objects
• Deriving 3D properties of objects
• Understanding changes in the scene
Different Approaches

• Optical-flow based methods
  Dense point-wise registration

• Feature-flow based methods
  Sparse point-wise registration

• Differential methods
  Region-wise registration plus subtraction

• Segmentation based methods
  Region-wise registration
Definition of basic terms

• Motion field (Velocity field)
  True motion of the scene projected on the 2D image plane.

• Optical flow (Apparent motion)
  Motion of light patterns in the 2D image plane.

NOTE: Motion field != Optical flow
What’s Going on in Object Recognition?

• Recognizing specific instances is out.

• Recognizing classes of objects is in.

• Learning is big.

• Interest operators are big.
What’s Going on in Video Analysis?

• Finding and tracking humans
• Recognizing their activities
• Understanding (foreign) news shows
• Determining what’s happening in meetings
• Looking for events in videos from unmanned aerial vehicles
Getting Started

• Read the papers about
  1. the Harris Corner Detector
  2. the Lucas-Kanade Registration Alg.

• Write a summary of each (as bullets)

• Be ready to discuss next class (March 30)