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)