**Computer Vision - 217**

**Homework 3**

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**Answers for questions:**

**Part A: Computing OF using Lucas-Kanade**

Question 5:

I ran the function OF in several scenarios:

1. Several pairs from the video Slide.avi
2. W - Changing the window size of the region
3. K - The distance between frames

When using bigger window size each pixel has more influence on its neighbors, i.e. the algorithm can mark a pixel moving in an opposite direction or has a smaller magnitude because of it neighbors. When increasing K (the distance between frames) and there is a fast motion we will miss those motion therefore for scenarios we want to segment background there is a chance we will mark moving objects as background

Question 8:

1. We chose to scale the image from 0.3 to 0.7 and got the following results:
   1. ……
2. If we use larger scale then we have better accuracy in all pixels and if we use smaller scale then we will receive the optical flow of large motion

**How should be used to overcome large motion???**.

**Part B:**

**Part C:**

**Documentation of the function**

**Part A:**

* Stereo:
  + Function sign:

*[U,V]=OF(F1,F2,* Sigma\_S*, Region)*

* + Input parameters:
    - **F1,F2:** two frames from a sequence.
    - ***Region*** is the local neighborhood window for computing the matrix *A*.
    - **Sigma\_S** = spatial Gaussian smoothing parameter
  + Output parameters:
    - Matrix U and V the represent the optical flow for each pixel
  + The function is located in the file OF.m

**Part B:**

* Disparity calculation:
  + Function sign:
    - [D] = disparityCalc(im1, im2,Sx,Sy,d\_min, d\_max)
  + Input params:
    - im1 – input image #1
    - im2– input image #2
    - Sx – patch size in x axis
    - Sy – patch size in y axis
    - d\_min – the beginning of the range to find corresponding pixel
    - d\_max – the end of the range to find corresponding pixel
  + Output params:
    - matrix D that consists of the disparity of each pixel
  + The function is located in the file disparityCalc.m