% 5. For the video (problem 1) you have taken,

% plot the optical flow vectors on each frame

% using MATLABFor the video (problem 1) you have

% taken, plot the optical flow vectors on each

% frame using MATLAB's optical flow codes.

% (1) treating every previous frame as a reference frame

% read video file

vidReader = VideoReader('./video/hw3-video.mp4','CurrentTime',1);

% init opticFlow object

opticFlow = opticalFlowLK('NoiseThreshold',0.009);

% init plot object

h = figure;

movegui(h);

hViewPanel = uipanel(h,'Position',[0 0 1 1],'Title','Plot of Optical Flow Vectors');

hPlot = axes(hViewPanel);

% process frames

while hasFrame(vidReader)

% read a frame

frameRGB = readFrame(vidReader);

frameGray = rgb2gray(frameRGB); % in some versions, using im2grpy(frameRGB)

% estimate optical flow

flow = estimateFlow(opticFlow,frameGray);

% show optical flow

imshow(frameRGB)

hold on

plot(flow,'DecimationFactor',[5 5],'ScaleFactor',10,'Parent',hPlot);

hold off

pause(10^-3)

end

% (2) treating every 11th frame as a reference frame

% read video file

vidReader = VideoReader('./video/hw3-video.mp4','CurrentTime',1);

% init opticFlow object

opticFlow = opticalFlowLK('NoiseThreshold',0.009);

h = figure;

movegui(h);

hViewPanel = uipanel(h,'Position',[0 0 1 1],'Title','Plot of Optical Flow Vectors');

hPlot = axes(hViewPanel);

freq=11;

for v = 1:freq:vidReader.NumFrames

frameRGB = read(vidReader, v);

frameGray = rgb2gray(frameRGB); % in some versions, using im2grpy(frameRGB)

flow = estimateFlow(opticFlow,frameGray);

imshow(frameRGB)

hold on

plot(flow,'DecimationFactor',[5 5],'ScaleFactor',10,'Parent',hPlot);

hold off

pause(10^-3)

end

% (3) treating every 31st frame as a reference frame

% read video file

vidReader = VideoReader('./video/hw3-video.mp4','CurrentTime',1);

% init opticFlow object

opticFlow = opticalFlowLK('NoiseThreshold',0.009);

h = figure;

movegui(h);

hViewPanel = uipanel(h,'Position',[0 0 1 1],'Title','Plot of Optical Flow Vectors');

hPlot = axes(hViewPanel);

freq=31;

for v = 1:freq:vidReader.NumFrames

frameRGB = read(vidReader, v);

frameGray = rgb2gray(frameRGB); % in some versions, using im2grpy(frameRGB)

flow = estimateFlow(opticFlow,frameGray);

imshow(frameRGB)

hold on

plot(flow,'DecimationFactor',[5 5],'ScaleFactor',10,'Parent',hPlot);

hold off

pause(10^-3)

end