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% 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
```

Plot of Optical Flow Vectors



Plot of Optical Flow Vectors



```
% (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

```



Plot of Optical Flow Vectors



```
% (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
```

Plot of Optical Flow Vectors



Plot of Optical Flow Vectors

