

Estimate Optical Flow Using Horn-Schunck Method

Create a VideoReader object for the input video file, visiontraffic.avi. Specify the timestamp of the frame to read as 11.

```
vidReader = VideoReader('/Users/sathwikchowda/Desktop/PXL_20220422_212036800.mp4','Cur
n = vidReader.NumFrames
```

```
n = 313
```

```
referenceFrame = 11
```

```
referenceFrame = 11
```

```
stepFrame = 31
```

```
stepFrame = 31
```

Specify the optical flow estimation method as opticalFlowHS. The output is an object specifying the optical flow estimation method and its properties.

```
opticFlow = opticalFlowHS
```

```
opticFlow =
    opticalFlowHS with properties:
```

```
        Smoothness: 1
        MaxIteration: 10
    VelocityDifference: 0
```

Create a custom figure win@down to visualize the optical flow vectors.

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

Read image frames from the VideoReader object and convert to grayscale images. Estimate the optical flow from consecutive image frames. Display the current image frame and plot the optical flow vectors as quiver plot.

```
for frame = referenceFrame:stepFrame:n
% while hasFrame(vidReader)
    frameRGB = read(vidReader, frame);
    frameGray = im2gray(frameRGB);
    flow = estimateFlow(opticFlow,frameGray);
    imshow(frameRGB)
    hold on
    plot(flow,'DecimationFactor',[5 5],'ScaleFactor',60,'Parent',hPlot);
    hold off
%     pause(10^-3)
end
```

Plot of Optical Flow Vectors



Plot of Optical Flow Vectors

