

CMPUT 414: Report

Lab 6

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I. Setup

We first setup the Github repository which can be found at the following URL:

<https://github.com/Tamarabyte/CrowdMotionCapture>

Next we installed Python3 and OpenCV on our own computers.

II. Optic Flow

To get familiar with OpenCV and Python3 we started with creating a simple program that could display the motion vectors computed by Optic Flow. This was a very simple program since OpenCV already had functions built in that calculated the Optic Flow.



III. Lucas-Kanade Tracking

Finally we implemented a tracking algorithm built in OpenCV. First the algorithm finds feature points within an image. These are usually corners or areas of high change. Next the algorithm uses Optic Flow to calculate the new positions of feature points.

```
# The variable 'p0' is the original location of the points and 'p1' is the new location  
p1, st, err = cv2.calcOpticalFlowPyrLK(old_gray, frame_gray, p0, None, **lk_params)
```

Since people can move in and out of the frame we added a section of code that would add new feature points to the scene. This works by first calculating areas of change between the current frame and the previous frame. Next we search for new feature points in these areas of change. Finally we add the new feature points to our tracking points if that new feature point does not have a similar corresponding tracking point. These are points in relatively the same location.

