

CourseWork 3

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1 Introduction

The Motion detection assignment was really fun and challenging at the same time. Fun because we had to experiment with different ideas of motion detection and it was honestly very interesting working on such an assignment. Challenging because there were quite a few hurdles and problems. Identifying a solution and a way around the problem was a challenge.

2 Implementation

We decided to develop an interactive ball controller implementing the Lucas and Kanade algorithm. A block diagram of the system is as follows

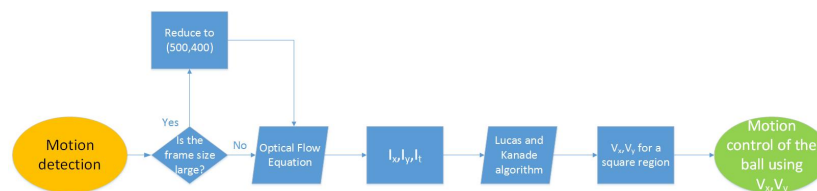


Figure 1: Algorithm of Motion detection

The program starts with capturing the frame. We scaled the frame to a workable size Initially we had the motion vector for the entire frame. The screen-shot shows below the initial motion vector obtained during the entire process.

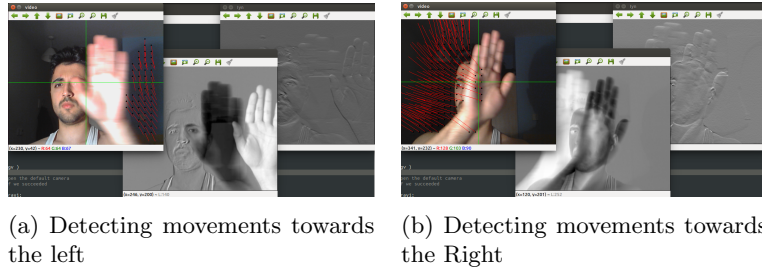


Figure 2: Detecting movements

Instead of finding the Velocity vector for the entire region we identified a square region which would act as our Controller region. The ball moves as per the motion of our hand movement while in this region. The movements are as follows UP, DOWN, LEFT, RIGHT and even in some cases DIAGONAL movement.

3 Summary

A major problem faced was the lighting, which would affect the It very much , causing a lot of noise. This problem was overcome by adding an external lighting source which clearly illuminates the hands for a better gesture recognition.

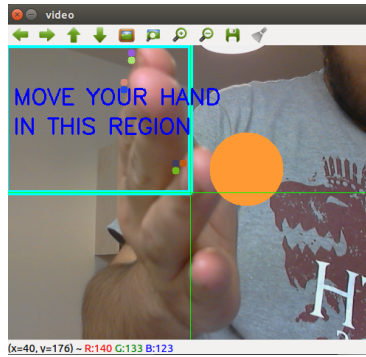


Figure 3: Resulting gesture recognition