ENPM673: Perception For Autonomous Robots

Extra Credit for Part 2

1. The Color Segmentation scheme used the RGB representation of the images. Are there any other representations of images that would be more effective to the algorithm.

Yes! There are better color spaces which can increase the effectiveness of the algorithm to identify the buoys. *HSV* is one such color space which will increase the color segmenting ability of the algorithm to identify the buoys effectively as compared to *RGB*.

(a) One of the flaws of *RGB* color space is that it cannot separate the color component and luminosity component in the image. Thus, making it difficult to identify colors in the image at varying illuminating conditions.

(b) On the contrary to RGB, HSV has separate luminosity component and separate color component. Thus, to segment the colors in an image one can use *Hue* and *Saturation* channels of an image and leave out the *Value* component. Leaving out *Value* makes color segmentation immune to different lighting conditions and thus improving its color segmenting abilities.

(c) We implemented same algorithm for buoy detection and just changed color spaces without tuning the Gaussian and we were able to remove false detections which were prominent in RGB space.

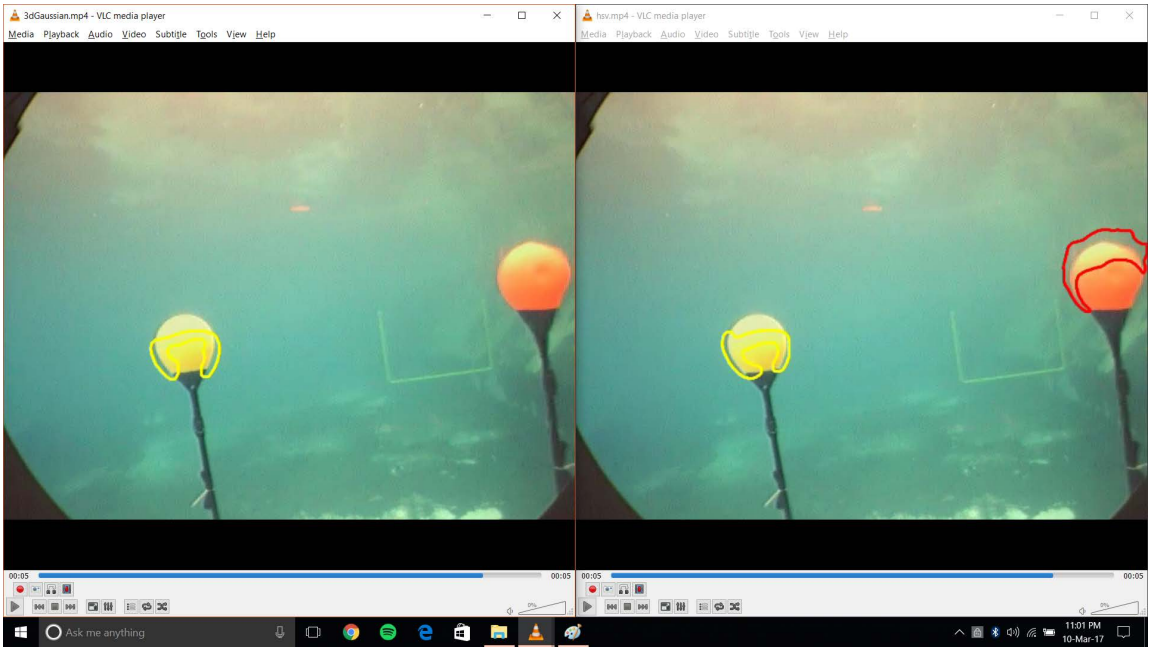

Fig 1 - Comparison between RGB(left) and HSV(right)