

4.1: HSV is typically better than RGB for tracking an object, as it isolates color from brightness information. The threshold range is wide in hue and saturation but tight in brightness since it is identifying black.

```
blk_lower_range = np.array([0, 0, 0])  
blk_upper_range = np.array([180, 255, 50])
```

Example with HSV:



4.2: Yes, turning on the brightness from my phone caused the box to shrink, making its identification of the object less accurate. This may be because I chose black, though it may be different for other colors.

4.3: Increasing the brightness on the color I chose helped tracking color. Decreasing brightness hurts tracking color.

4.4: The phone seems more robust to brightness since it is emitting light too.

