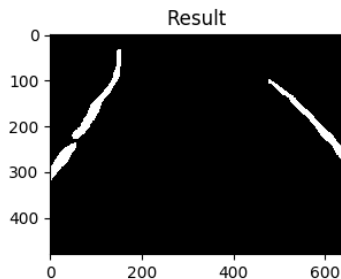
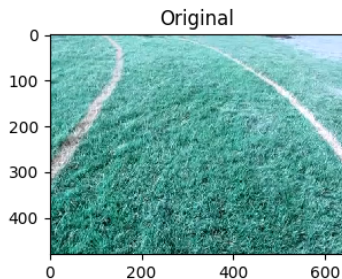


## IGVC Milestone 2

## Implement lane detection

Using image processing technique, find the lane that the robot must follow.

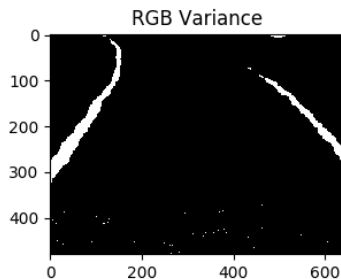
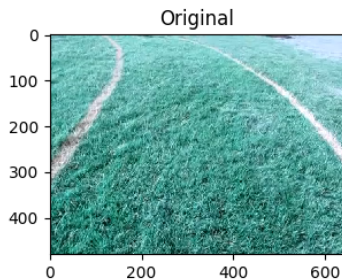


# Implement lane detection: Filters

Combine multiple filters to find the lane

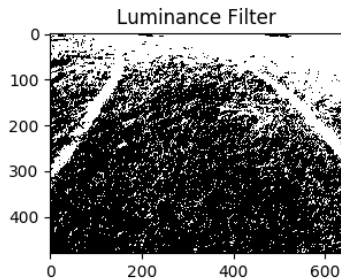
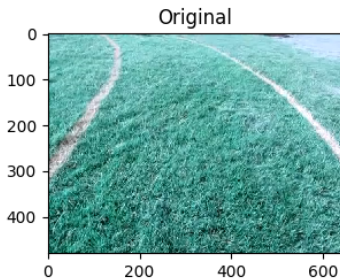
## RGB Variance:

Filters the pixels if the 3 color channel is different from each other.



## Luminance:

Using the luminance channel in HSL colorspace in order to find brighter area.



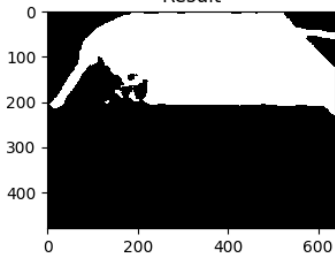
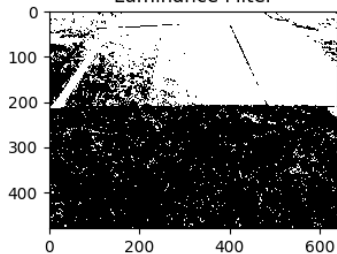
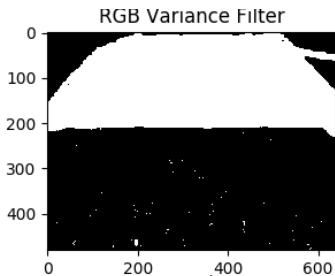
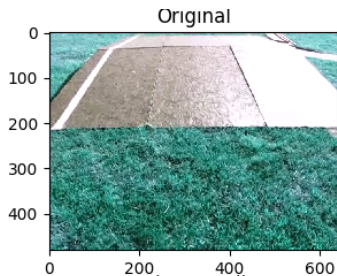
## Implement lane detection: Other image processing technique

- ▶ Using median blur in order to reduce the noise in image while maintaining the edge
- ▶ Using opencv2 morphology in order to fill the small spot

## Implement lane detection: Drawback

- ▶ The threshold value for the filter must be adjust accordingly to the environment.
- ▶ Currently, the functions cannot differentiate the white paint from the light reflected on the metal surface or other white object.
- ▶ The team is looking into using pattern recognition in order to refine the result.

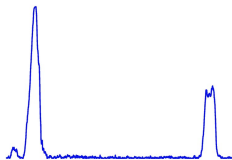
# Implement lane detection: Drawback





## Implement lane detection: Failed approach

- ▶ Considered using sliding windows and histograms for finding the curve of the lane, but the method is not suitable.



## Test lane detection

Currently, the team is using a script to apply the lane detection to all test input and manually checking the result.

## Next milestone

Implement and test mapping.

Questions?