

In this project the autonomous navigation is achieved with the help of sensing, decision making and execution.

### Sensing

It is achieved through telemetry which is basically sensor data regarding different parameters such as: rover's position, throttle, brake, steering angle and speed, roll, pitch and yaw angles etc. Rover gets the perception of the environment by analysing the image from the camera.

### Decision making

The decision making process involves the following steps:

- Perception: Read color image and identify the R, G, B component and use color thresholding to produce binary image
- Do a perspective transform of the to convert the image from the perspective of the robot to the perspective of the world
- Color Threshold to the warped image. It will allow identifying navigable terrain and obstacle.
- Convert world co-ordinate to rover-centric co-ordinate
- Map rover perspective image to the ground truth image using rotation and translation

### Execution

Execution involves running the wheels or throttle to a navigable terrain and control speed and rotate using brake and steering wheel