CS 3630 Project 5

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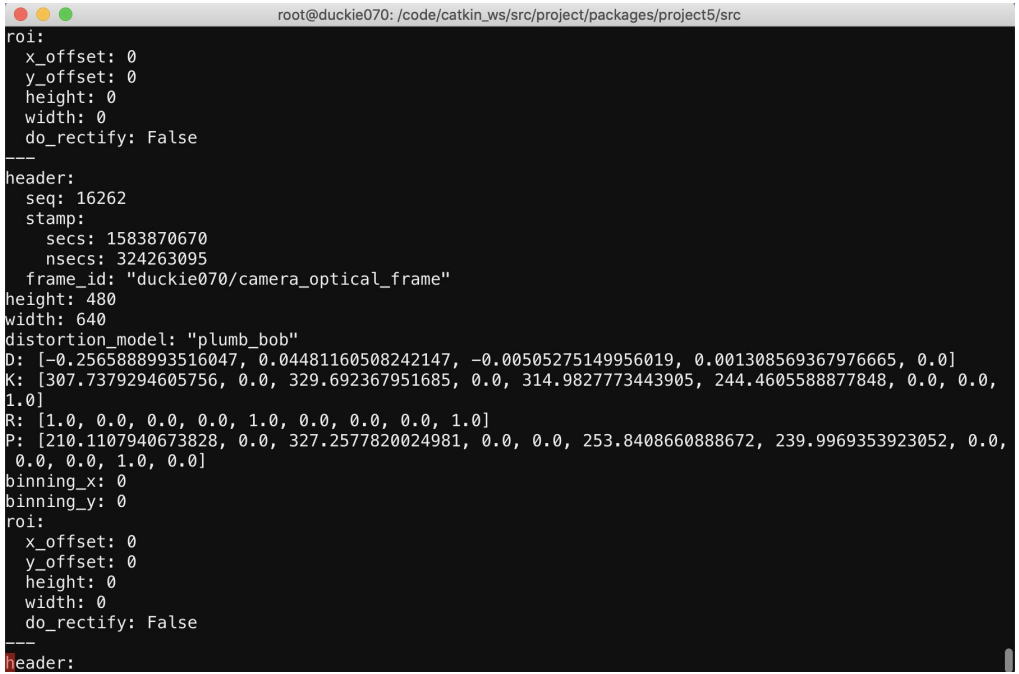
1. Provide a screenshot of Internal Camera Matrix (K) from the command line and the calculated value of Focal length

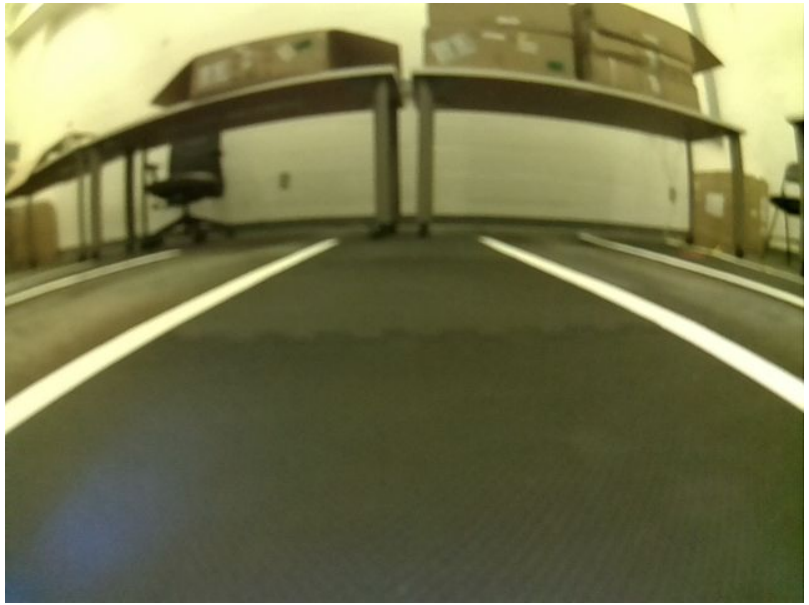
i.)



ii.) 311.360353402 = (307.7379294605756 + 314.9827773443905) / 2

2. Provide a screenshot of one of the 20 images captured by the camera and the link to Google Drive folder with saved images.

i.)



ii.)https://drive.google.com/drive/folders/14hI2GfhTF0b_bUAzDP18Xc655zFwK98w?usp=sharing

3. Enter the pose of the end point [x,y,theta] (Note: x,y to be entered in cm, theta in degrees)

X: -0.79375 cm

Y: 81.43875 cm

Theta: 3 degrees

4. Enter the height of the camera (in cm)

10.16 cm

5. Explain why changing the focal length of the camera affects image quality?

Changing the focal length changes the angle of the camera's view. The shorter the focal length is the wider the angle of view and greater the area the image captures while longer focal lengths narrows the view and makes the image's subject appear closer and larger. There is a higher chance of reduction of image quality with a longer focal length as it is more vulnerable to image shake and vibration as the perspective is tighter.

6. Specify the challenges faced during the lab

One of the main challenges we faced during this lab was adjusting the focal length such that our camera is producing clear and less blurry images. Despite adjusting the focal length by rotating the lense both counterclockwise and anti-clockwise (by smaller and smaller increments), we still produced shots that were still a little blurry. Other issues included removing other objects from view such as other runways' white lines and adjusting the trim such that our Duckiebot moved and took pictures in a straight line.

Additionally, even with a good trim, sometimes the Duckiebot would veer left, then veer right, resulting in an inconsistent theta for our end point.