AMR Opdr2 Labbook

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1 Introduction

For this assignment we had to follow the assignment from Mr Scarramuzza for detecting walls with an omnidirectional camera.

2 Output after initial implementation

We implemented all the code that was listed in the assignment and then we got the following output:

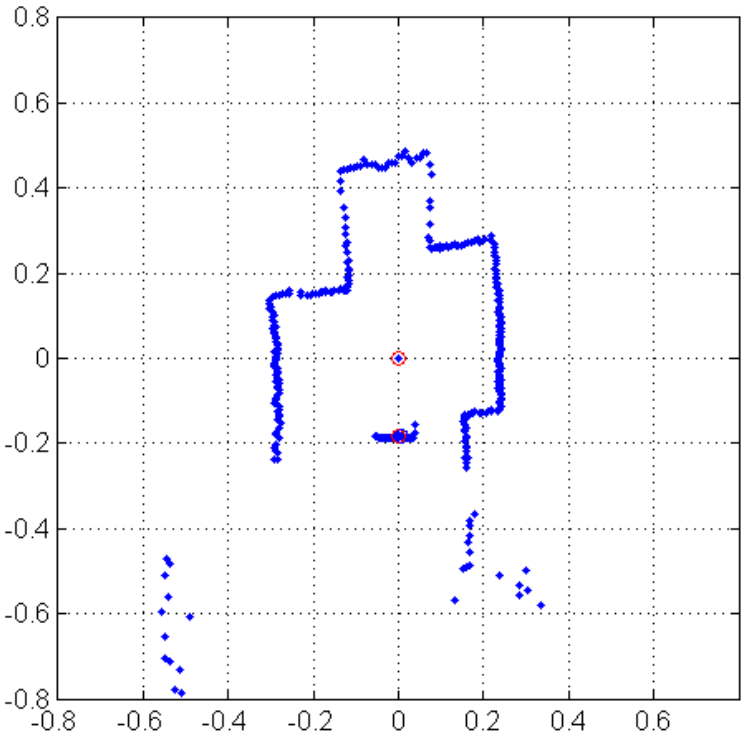

Figure 1: After Implementation

3 Parameters

We had to tune some parameters in order to get good results. We adjusted the parameters as following:

```
alpha = 115;         %Radial distortion coefficient
height = 0.17;       %camera height in meters,
BWthreshold = 90;    %Threshold for segment the image into Black & white colors
angstep = 1.0;       %Angular step of the beam in degrees
axislimit = 0.8;     %Axis limit
Rmin = 85;           %Overwrite value from calibration step.
Rmax = 160;          %Overwrite value from calibration step.
center = [325.1,224.2]; %Value from calibration step.
```

4 Error

For this section we implemented the error formula given in the slides.

```
sigma_dist = ((height/alpha) * (1 + tan(rho/alpha).^2 )) * sigma_rho;
```

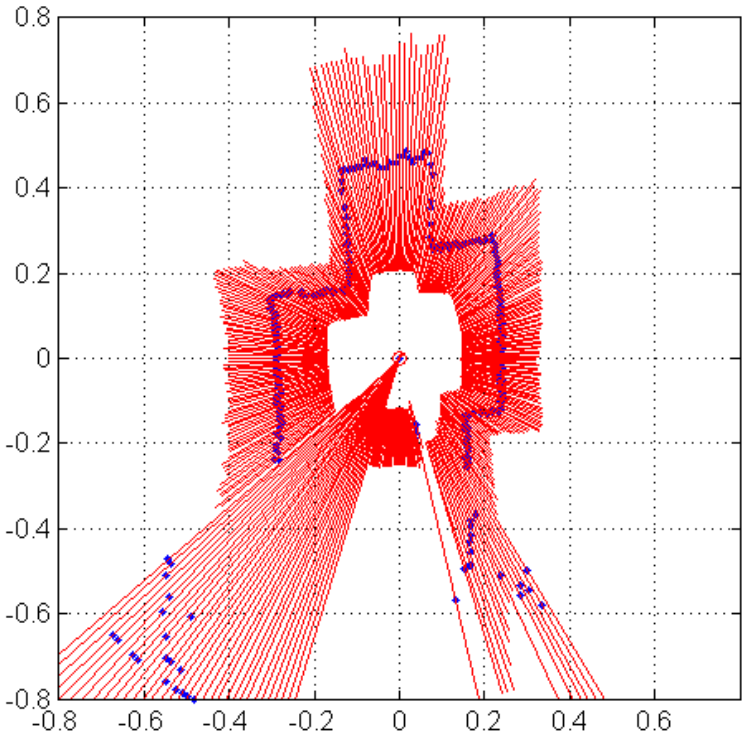

Figure 2: After Implementation

5 Problems

the standard deviation returned NaN on c.jpg because some of the points went out of bounds and had value inf. We fixed this by replacing all the INF with rmax. We tought that this was the most elegant solution.