1 Description

For this assignment, I did the graph optimization using g2o package. There is only one script in the package that can create graph, optimize, and plots x, y theta with time t. The is also a launch file that is used to run this package. The bag file is also put inside the package. Moreover, there are two folders contain different results using same bag file. This is very wired. More will be discussed in evaluation section. Generally, I used the template provided in instruction and subscribe from several topics to get information to contract the graph and do the optimization.

2 Result

The result is very wired. Because I decided to play bag file by hand in two different terminals. The order of run launch file and play bag file will cause different result. (This is not 100 percent true, but I could figure out why.) I will show two result below.

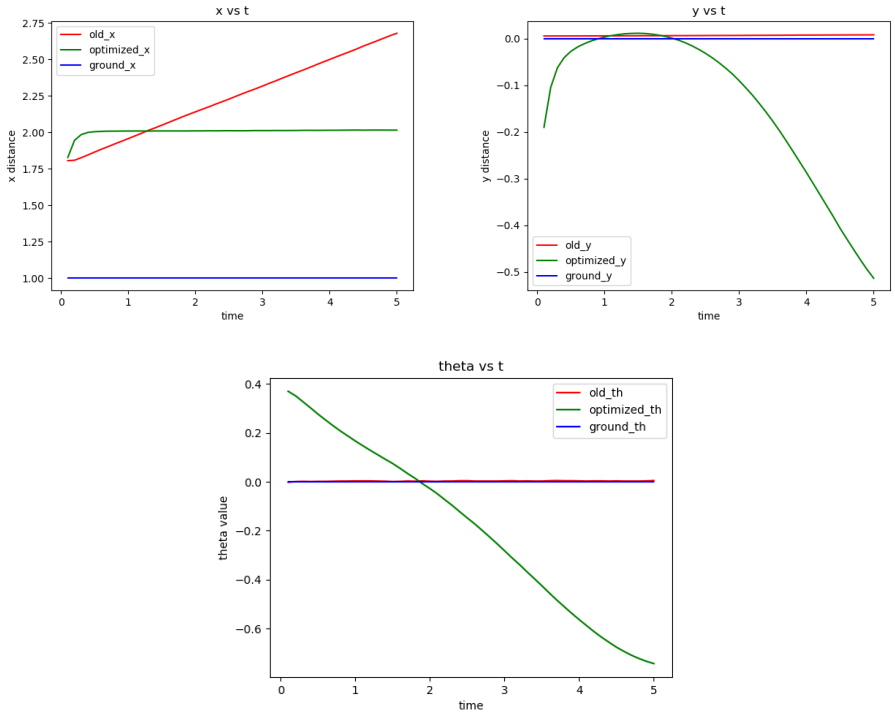

Figure 1: Result of first play bag file then run launch file

3 Evaluation

For this assignment, I finished everything that required. But there are something I wasn't very sure it is correct. First, when calling add_edge function, the order of add vertex matters. I tried add edge from old vertex to new vertex which it make more sense to me, but the plot doesn't look good so I changed it to from new vertex to old vertex. The result looks better but I don't understand why. The second thing I don't understand is why the order of running scripts and bag file will influence the result. Even though both two result doesn't looks that good, I think the first one looks better. Last thing is why the optimized result looks worse than estimated result. No matter which result we look at, it seems like the estimated result is better than the result after optimization.

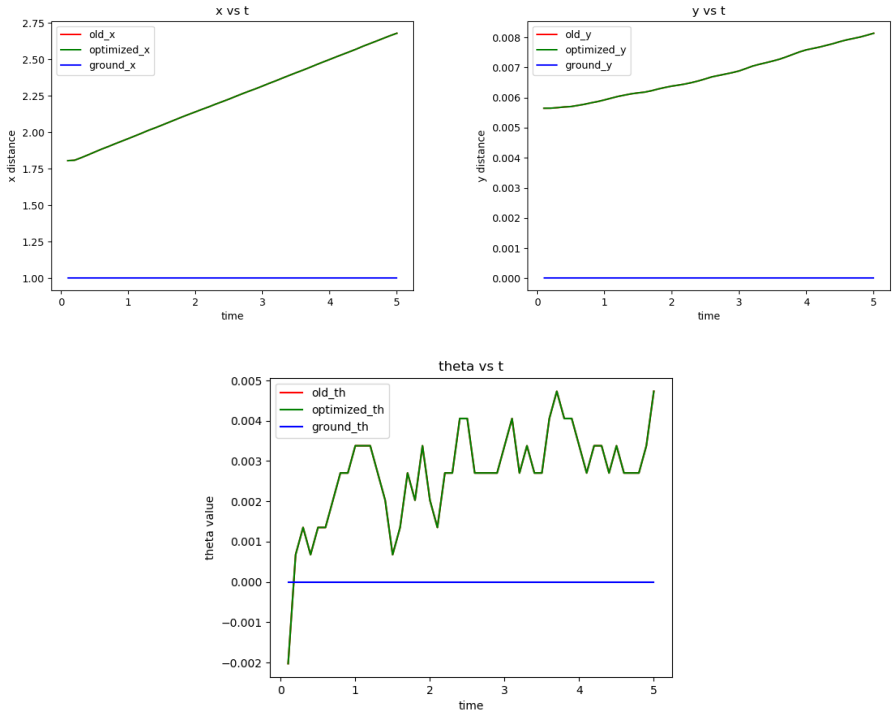

Figure 2: Result of first run launch file then play bag file

4 Allocation of effort

Because this is an individual homework, I did everything on my own. Construct graph took me sometime and where to find the saved .g2o file also took time. The most difficult part I think in this assignment is how to analyze the result. In the end I couldn't figure out why the results are different and why it looks wired.