**Lua file:**

1. **Lua for Process 1 (generation of .pbstream file):**

Our final configuration for .lua is given by [cartographer\_configuration\_3d.lua](https://drive.google.com/file/d/1SZNFGRHKy2g8Tuwvei9LkX71d9srjvED/view?usp=sharing) . The parameters for this were set as per the ones did [here](https://github.com/NTUwilliam/Google_cartographer_ros/blob/master/cartographer_ros/configuration_files/backpack_3d.lua). The user NTUWilliam mentioned them to be working.

* The only differences being TRAJECTORY\_BUILDER\_3D.num\_accumulated\_range\_data = 0.1 instead of the NTUWilliam’s value of 1. This was done because this gave faster results and not much difference was observed among the results on RViz’s window (something like a 2D map) that is observed when running process 1 for values of 0.1 and 1. The higher the value, the accurate the map should be, but setting it to 100 or 160 gave a very slow performance.
* The other difference being the setting of frame\_ids.

In our case, tracking\_frame = "base\_link" instead of NTUWilliam’s value of imu\_link. As far as I remember, this was done because we didn’t have a /imu\_link in our /tf tree and we decided to use /base\_link, which was present in our /tf tree. **THIS**

* We commented out use\_pose\_extrapolator = true because we received an error regarding this while running this process.

More detailed insights about the various parameters of the lua file to be used for this process can be found [here](https://drive.google.com/file/d/0B1KZT92BcdVNWDBiVTRXMjFOVzg/view)

1. **Lua for Process 2 (generation of .ply file)**

Our final configuration for .lua for this case is given by [assets\_writer\_backpack\_4d.lua](https://drive.google.com/file/d/1tyctWR_fLbu1JC2fz1Vh2wDg_M_GtRiF/view?usp=sharing) . The parameters for this were set as per the default settings in the default [assets\_writer\_backpack\_3d.lua](https://github.com/googlecartographer/cartographer_ros/blob/master/cartographer_ros/configuration_files/assets_writer_backpack_3d.lua) file in Google Cartographer install\_isolated folder/configuration\_files folder.

* The only change we did was the addition of commands:

{

action = "write\_ply",

filename = "points.ply",

},

In the lua file as mentioned [here](https://github.com/googlecartographer/cartographer_ros/issues/867#issuecomment-389382788).

We used the file [assets\_writer\_backpack\_4d.launch](https://drive.google.com/file/d/15mELxDdDOvnbgbupxXvSPGt9fG4PLsCY/view?usp=sharing) for this purpose. The commands used in this were from insights from the default [assets\_writer\_backpack\_3d.launch](https://github.com/googlecartographer/cartographer_ros/blob/master/cartographer_ros/launch/assets_writer_backpack_3d.launch) file in the Google Cartographer install\_isolated folder/launch folder.

The only changes that we made were to point the .lua and .urdf arguments in the cartographer\_assets\_writer node to our .lua and .urdf files.