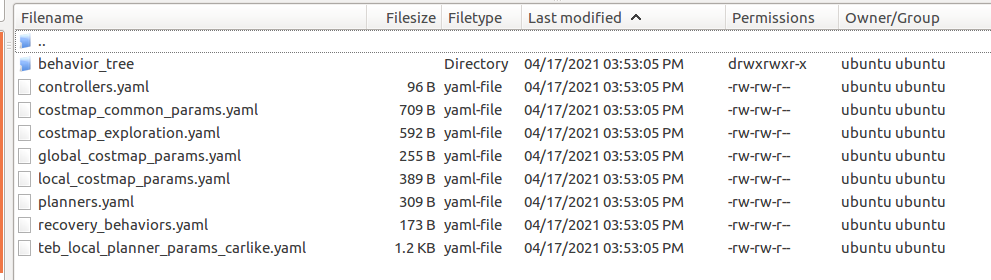
Update the [lawn\_tractor](https://github.com/ros-agriculture/lawn_tractor/tree/develop)/[lawn\_tractor\_navigation](https://github.com/ros-agriculture/lawn_tractor/tree/develop/lawn_tractor_navigation)/**config**/ settings

Notes:

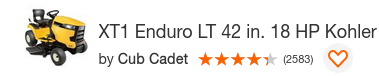
* <https://wiki.ros.org/teb_local_planner/Tutorials/Setup%20and%20test%20Optimization>

On the tractor RPI open /home/ubuntu/catkin\_ws/src/lawn\_tractor/lawn\_tractor\_navigation/config

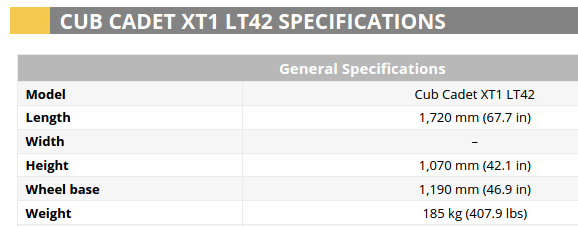


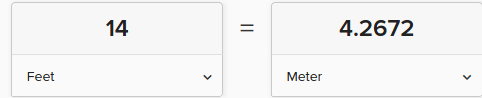
| **costmap\_common\_params.yaml** | **costmap\_exploration.yaml** |
| --- | --- |
| # file: costmap\_common\_params.yaml  # # Make sure to preserve indentation if copied (for all yaml  # files)  footprint: [ [-0.125,0.125], [0.125,0.125], [0.125,-0.125],  [-0.125,-0.125] ]  transform\_tolerance: 0.5  map\_type: costmap  global\_frame: map  robot\_base\_frame: base\_link  obstacle\_layer:  enabled: true  obstacle\_range: 3.0  raytrace\_range: 4.0  track\_unknown\_space: true  combination\_method: 1  observation\_sources: laser\_scan\_sensor  laser\_scan\_sensor: {data\_type: LaserScan, topic: scan,  marking: true, clearing: true}  inflation\_layer:  enabled: true  inflation\_radius: 0.5  static\_layer:  enabled: true | track\_unknown\_space: true  global\_frame: map  rolling\_window: false  plugins:  - {name: external, type: "costmap\_2d::StaticLayer"}  - {name: explore\_boundary, type: "frontier\_exploration::BoundedExploreLayer"}  #Can disable sensor layer if gmapping is fast enough to update scans  - {name: obstacles\_laser, type: "costmap\_2d::ObstacleLayer"}  - {name: inflation, type: "costmap\_2d::InflationLayer"}  explore\_boundary:  resize\_to\_boundary: false  frontier\_travel\_point: middle  #set to false for gmapping, true if re-exploring a known area  explore\_clear\_space: false |
|  |  |
| **global\_costmap\_params.yaml** | **local\_costmap\_params.yaml** |
| # file: global\_costmap\_params.yaml  global\_costmap:  update\_frequency: 1.0  publish\_frequency: 0.5  static\_map: true  plugins:  - {name: static\_layer, type: "costmap\_2d::StaticLayer"}  # - {name: inflation\_layer, type: "costmap\_2d::InflationLayer"} | # file: local\_costmap\_params.yaml  local\_costmap:  update\_frequency: 5.0  publish\_frequency: 2.0  static\_map: false  rolling\_window: true  width: 5.5 ## -> computation time: teb\_local\_planner  height: 5.5 # -> computation time: teb\_local\_planner  resolution: 0.1 # -> computation time: teb\_local\_planner  plugins:  - {name: obstacle\_layer, type: "costmap\_2d::ObstacleLayer"} |
|  |  |
| **planners.yaml** | **recovery\_behaviors.yaml** |
| planners:  - name: 'GlobalPlanner'  type: 'global\_planner/GlobalPlanner'  planner\_patience: 5.0  planner\_frequency: 1.0  GlobalPlanner:  allow\_unknown: false  default\_tolerance: 0.0  visualize\_potential: true  use\_dijkstra: true  use\_quadratic: false  use\_grid\_path: false  old\_navfn\_behaviour: false | recovery\_behaviors:  - name: 'rotate\_recovery'  type: 'rotate\_recovery/RotateRecovery'  - name: 'clear\_costmap'  type: 'clear\_costmap\_recovery/ClearCostmapRecovery' |
|  |  |
| **teb\_local\_planner\_params\_carlike.yaml** |  |
| # file: teb\_local\_planner\_params.yaml  TebLocalPlannerROS:  # Trajectory  teb\_autosize: True  dt\_ref: 0.3  dt\_hysteresis: 0.1  global\_plan\_overwrite\_orientation: True  allow\_init\_with\_backwards\_motion: False  max\_global\_plan\_lookahead\_dist: 3.0  feasibility\_check\_no\_poses: 5  # Robot  max\_vel\_x: 2.0  min\_vel\_x: 0.0  max\_vel\_x\_backwards: 1.0  max\_vel\_theta: 2.0  acc\_lim\_x: 2.5  acc\_lim\_theta: 2.5  min\_turning\_radius: 1.0 # diff-drive robot (can turn in place  wheelbase: 0.4  cmd\_angle\_instead\_rotvel: True  weight\_kinematics\_turning\_radius: 1.5 # increase of min\_turning\_radius is not enough  footprint\_model:  type: "line" # include robot radius in min\_obstacle\_dist  line\_start: [0.0, 0.0] # include robot expanse in min\_obstical\_dist  line\_end: [0.4, 0.0]  # Goal Tolerance  xy\_goal\_tolerance: 0.4  yaw\_goal\_tolerance: 0.2    # Obstacles  min\_obstacle\_dist: 0.25  costmap\_obstacles\_behind\_robot\_dist: 1.0  obstacle\_poses\_affected: 10  # Optimization  no\_inner\_iterations: 5  no\_outer\_iterations: 4  optimization\_activate: True  optimization\_verbose: False |  |

* The turning radius, or *turning path*, of a vehicle is the smallest circular turn that it can make.
* A vehicle’s turning circle is the radius (or diameter) measured by the outer wheels of the vehicle while making a complete turn.



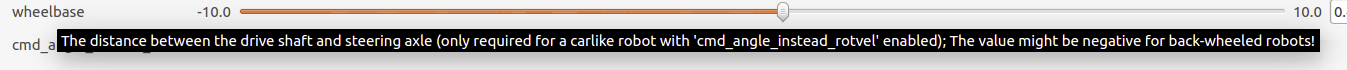


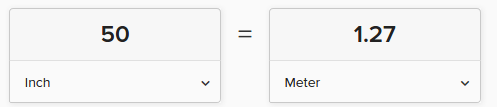




The diameter of the turning circle measured by the outer wheels of my lawn tractor while making a complete turn is ~13-14 feet. (~4-4.3 meters). I know this because I executed cmd\_vel commands linear.x(speed) 0.8, angular.z(steer angle) -1.0 and +1.0 , distance (in meters) 80 and measured the results.

Wheelbase = 50 inches





# GoalTolerance

xy\_goal\_tolerance: 1.0

yaw\_goal\_tolerance: 1.0

