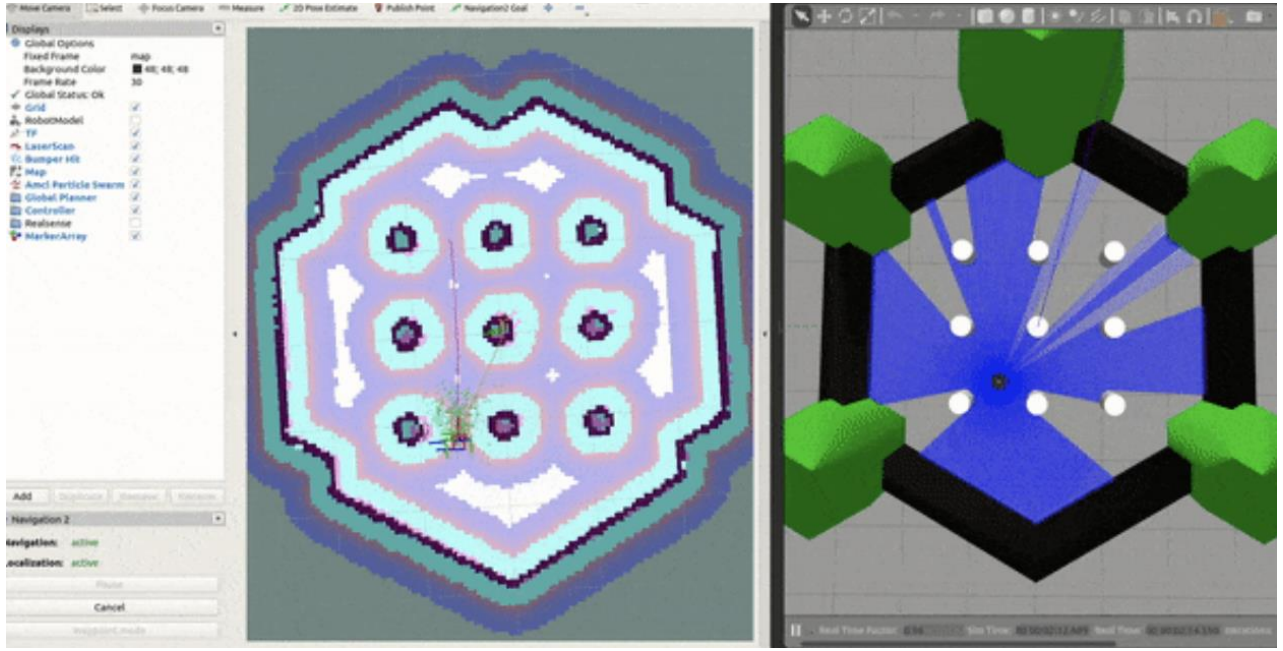
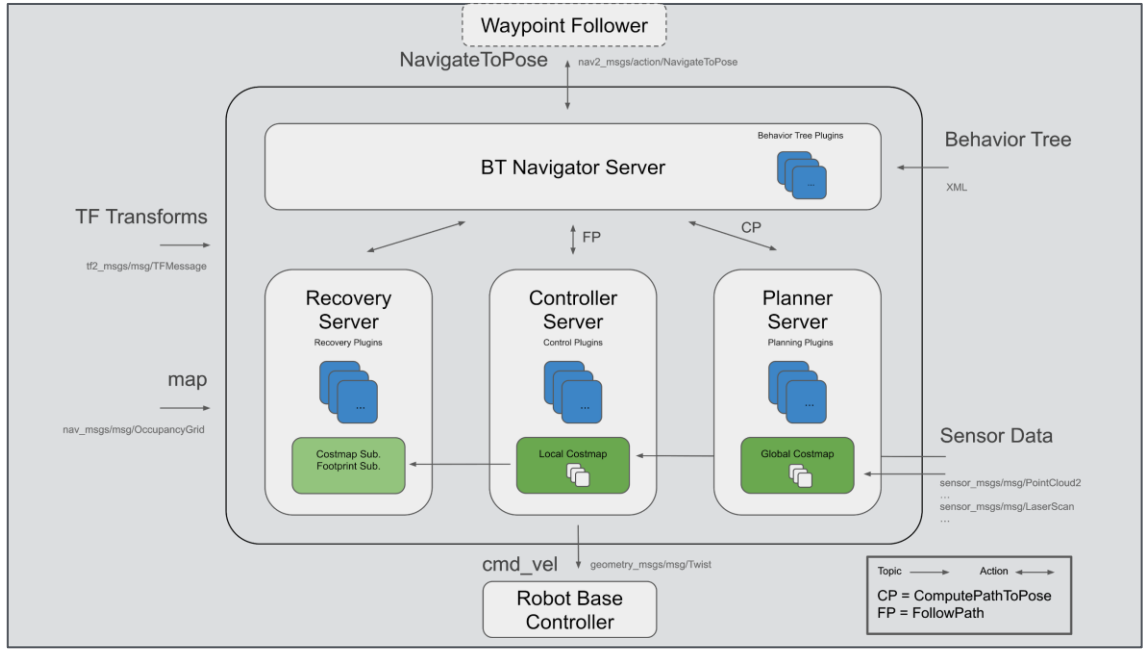
赛题 20

Create New Planner and Controller Plugins

直播导师：巨震

ROS(Navigation2) 赛题介绍





NAV2

Servers
- Planner
- Controller
- Recovery

Map
- Costmap
- Layers
- Filters

Misc
- Map Server
- Plugins
- Behavior Tree

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20. Create New Planner and Controller Plugins

Background

The ROS 2 Navigation Stack has a number of plugin interfaces to help users create or select specific plugins for planning, control, and recovery for their applications.

Two specific areas that the Navigation2 stack could use more algorithm plugins for is for path planning (referred to as a planner plugin) and local trajectory generation (referred to as controller plugins). A simple tutorial for creating a planner plugin can be found here. Currently, we have one planner, NavFn which implements an A* and Dijkstra's planner. It also has two controllers, DWB and TEB which implement a DWA and timed elastic-band optimization techniques. There is also a Hybrid-A* and OMPL planner in development.

Project

Your task will be to create a high-quality implementation of one of the following algorithms for the navigation2 plugin interfaces. Alternative algor

- Planner Plugin Options: D* or variant, Vornoi planner, Navigation graph route planner, State Lattice planner, kinodynamic planner, and any plan
- Controller Plugin Options: CiLQR, iLQR, MPC, Splines, path following or dynamic obstacle following controllers.
- Additional options: helping in completing the OMPL or Hybrid-A* planner.

Project output requirements

- A functional planner or controller plugin for the Navigation2 stack
- Plugin should be optimized for run-time performance with 50% or greater test coverage