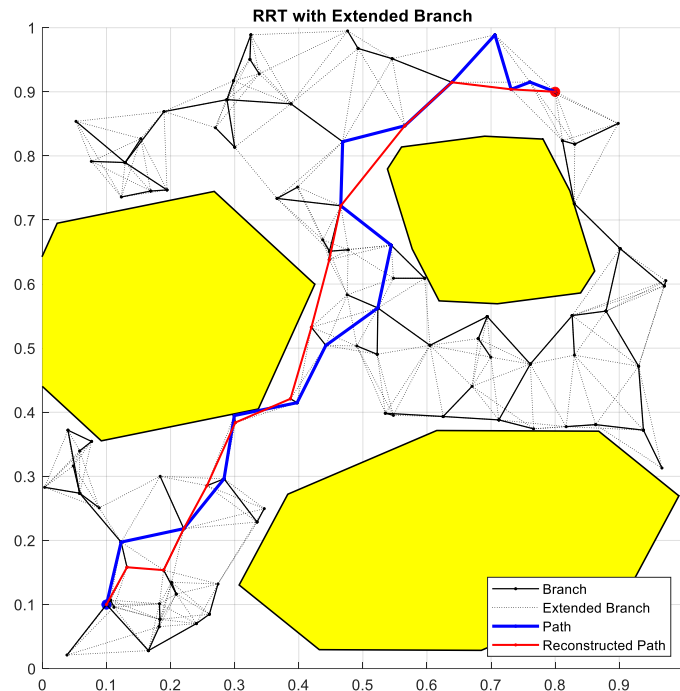


RRT

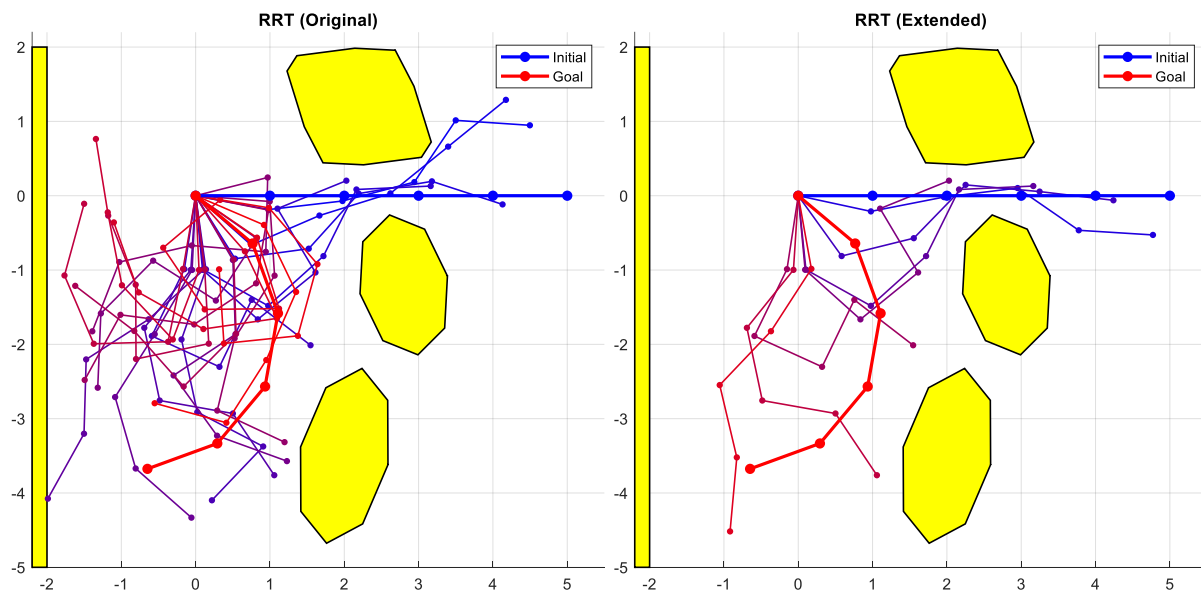
Using RRT may cause many unnecessary steps. To solve this problem, some close branches can be connected, then the planner is able to take a shortcut.

For example, a 2d planner using RRT with extended branches shows below:

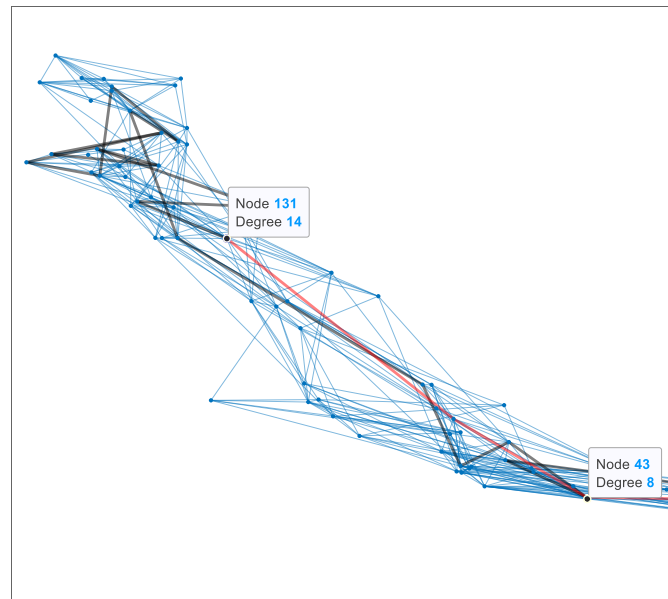


Although this step causes additional calculation time, it is still worth doing since the calculation time is usually much shorter than the execution time for these unnecessary movement of a real robot.

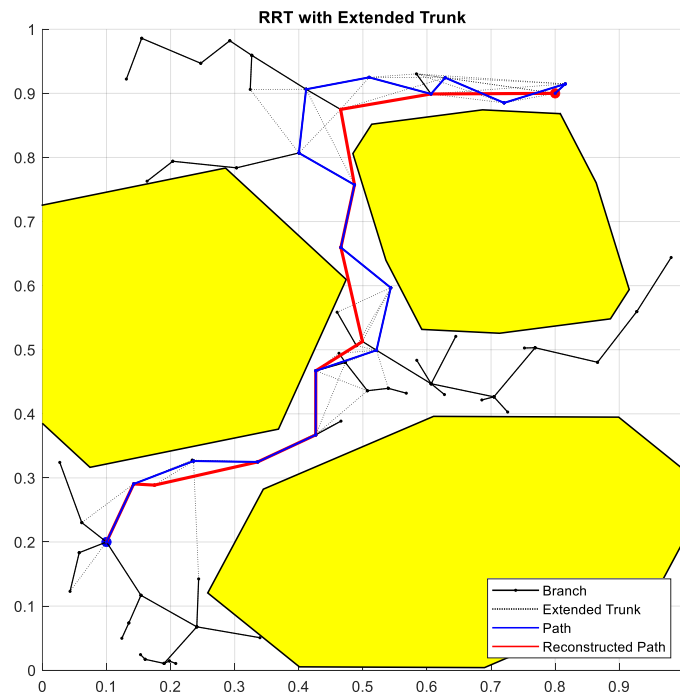
Applied on a 2D 5 links robot:



From Node 43 to Node 131, the reconstructed graph can save many steps (red path vs. black path):



Another way to speed up the additional calculation is just extending the “Trunk of the Tree”, that means based on the existing tree, calculate the route first, then only connecting some nodes near the route. This will reduce the many unnecessary calculations.



PRM

