

README

Description:

1) Energy efficient motion planning

For movement on both wood and asphalt surfaces, the first half of the video compares distance optimal motion planning with energy efficient motion planning. After showing the predicted path lengths and energy consumption, the video shows how distance optimal motion planning, which does not enforce a minimum turn radius (MTR) constraint, can cause the robot to be unable to track the trajectory. In contrast, for energy efficient motion planning, the trajectory doesn't violate the MTR constraint and the robot was able to track it accurately. The second half of the video shows the effect of payload on energy efficient motion planning for movement on both the wood and asphalt surfaces. The video emphasizes that if the robot is commanded with a trajectory developed for a payload that is smaller than the actual payload, it may be unable to track the trajectory.

2) Momentum based motion planning

The first half of the video shows the momentum based motion planning for the stiff hill vegetation. First the motion planning without the vehicle dynamics was performed, which causes the vehicle to get stuck in the vegetation. Later when the motion planning was performed using the dynamics of the vehicle, the vehicle was able to track the given trajectory and reached with zero velocity to the goal. Similarly, the second half of the video shows the momentum based motion planning for the steep hill, with and without the dynamics of the vehicle.

File Size: The size of the file is 97.7 MB.

Player Information: May be played using QuickTime, RealPlayer or Windows Media Player.

Packaging List: 1) README file
2) Energy_efficient_motion_planning.mpg
3) Momentum_based_motion_planning.mp4

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