[30.12.2020]

[Frequency-Aware Model Predictive Control]

Summary

This paper proposed a frequency dependent cost function for MPC to tackle two problems: **1. imperfect torques; 2. imperfect rigid ground contact model (videos shows nice results when the robot is walking on the matrices.**..

Some key points of this paper:

➢ Theoretical not available yet, this is more of an empirical approach that intuitively penalize high frequency inputs.

➢ Also used to handle the gap between MPC frequency and high torque command frequency.

Major Analysis and Comparison

1) Simultaneous optimization of footstep location and contact interaction is achieved by having both contact force and joint velocities as control inputs.

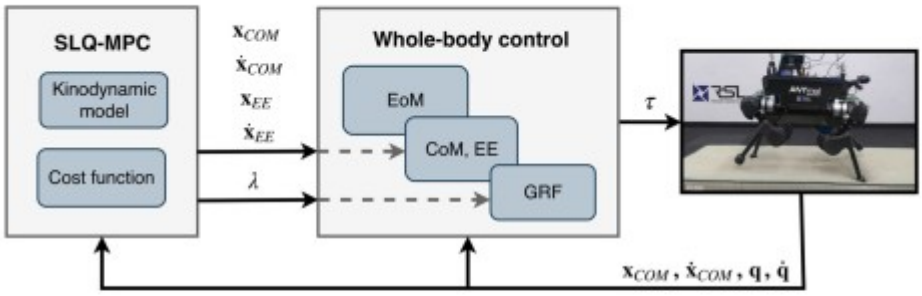

Fig. 4. MPC and whole-body control structure overview. The SLQ-MPC algorithm running on a separate desktop PC sends center of mass (CoM) and end-effector (EE) reference to the onboard whole-body control structure. This hierarchical controller computes torque commands based on the listed priorities.

2) The model is also used in later papers: MPC-feedback torque command. And also is used in my semester thesis. Therefore, MPC+WBC is also used here.

Thoughts

1) MPC+WBC seems popular currently. Meet my intuition.
2)