

## Conflicting Requirements

compliant behavior

precise movement

collision avoidance

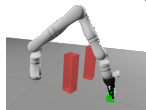
convergence

## Heterogeneous Tasks

open the door



safe moving



balance



## Customizing Representations and Control Strategies

LLM as a control expert

Meta-Control

hierarchical control system

## Hyper-parameter $\theta$

desired stiffness

safe distance

neutral position

## Task Space

target gripper position

Cartesian trajectory controller

object position

low frequency whole body MPC

cart pos. & vel., pole angle & vel.

LQR for cart force

## Tracking Space

gripper waypoints, joint forces

compliance control

target joint state, distance to obstacles

high frequency QP-based safe filter

target cart force

hybrid force pos. controller

