Advanced Robotics

2 – Why are we here ?
16 Sep 2024
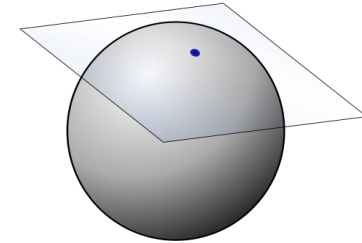
Steve Tonneau - School of Informatics
University of Edinburgh

Course objective:

Control a robot in an environment such that it accomplishes a motion task

We need to express all these notions rigorously, with maths.

Exercise: What do each of these terms mean to you?

Course objective:

Control a robot in an environment such that it accomplishes a motion task

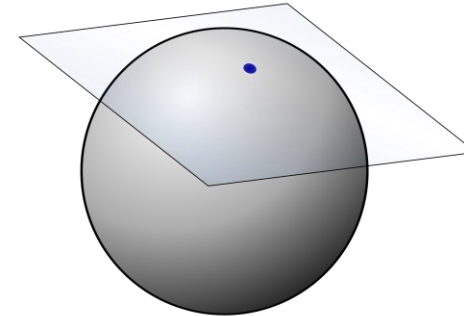We need to express all these notions rigorously, with maths.

Let's put our hands in the mud right away with the tutorial environment

Course objective:

Control a robot in an environment such that it accomplishes a motion task

Model of the robot (and the environment)

❑ Geometry / Dynamics state

❑ Constraints (collisions, forces etc)

Mathematical definition of a task as a (differentiable) function

❑ f(q) = 0 means the task is satisfied

Motion generated using an optimal control formulation

Course objective:

Control a robot in an environment such that it accomplishes a motion task

Model of the robot (and the environment)

❏ Geometry / Dynamics state   Let's start with this

❏ Constraints (collisions, forces etc)

Mathematical definition of a task as a (differentiable) function

❏ $f(q) = 0$ means the task is satisfied

Motion generated using an optimal control formulation

Homework for next week

❏ Self run the python tutorial if you need

❏ Make sure your environment is setup on DICE and run tutorial 0

❏ Ask questions on ~~Piazza~~ EdStem if you do not understand something