



The University of Edinburgh

Natural and dynamic locomotion of legged machines

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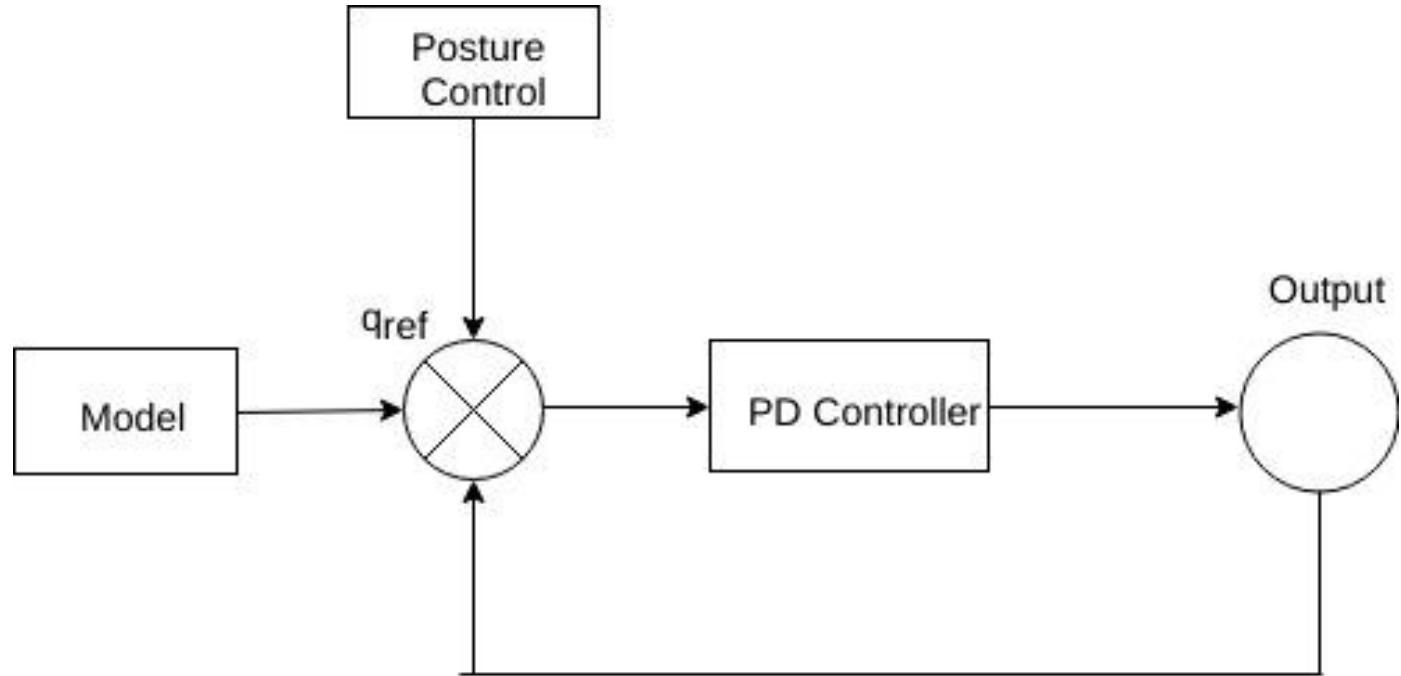
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Description

- Using the prior work on the online estimation algorithm, the goal of the project is the more efficient, swift and natural movement of a biped robot
- Feedback close loop control
 - LIP Model
 - PD Control
 - Foot placement

Control Loop



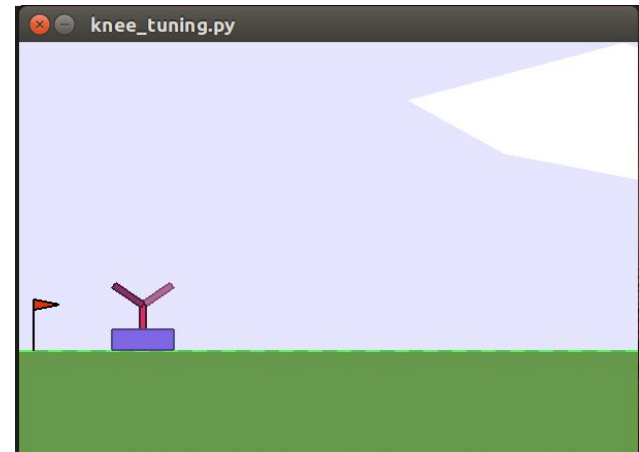
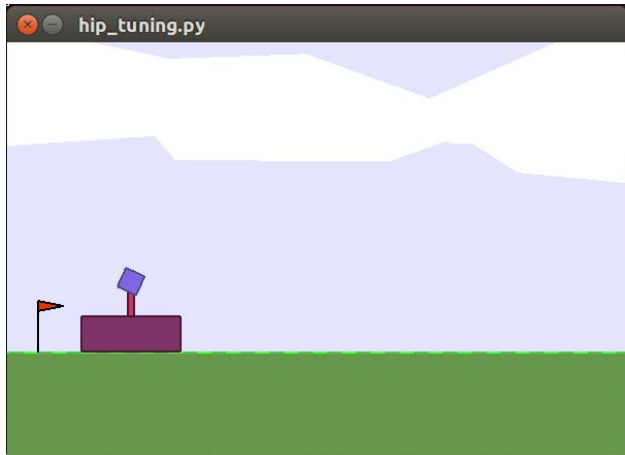
PD Controller

- Logging the raw data from the simulation, discovered a lot of oscillations
- Noise filtered out



PD Tuning

- Calibrated again for hip and knee joints
- Hip procedure
- Knee procedure



Posture Control

- Idea: Keep the body upright at all times
- The torque at the hips moves the body
- We add a compensating angle to the reference angle of the hip, taking into account the angular velocity of the body



Issues

- Despite the calibrated gains the robot is not showing a gait-like movement
- Inverse Kinematics probably the problem
- Need to take further action



Possible addition

- At the moment, robot has point feet
- Add ankle joints and feet
- Introduce control for them

