

Project: Part 5

24-677 Special Topics: Modern Control - Theory and Design

Ryan Wu (ID: weihuanw)

Due: Dec 8, 2023, 11:59 pm

Exercise 1.

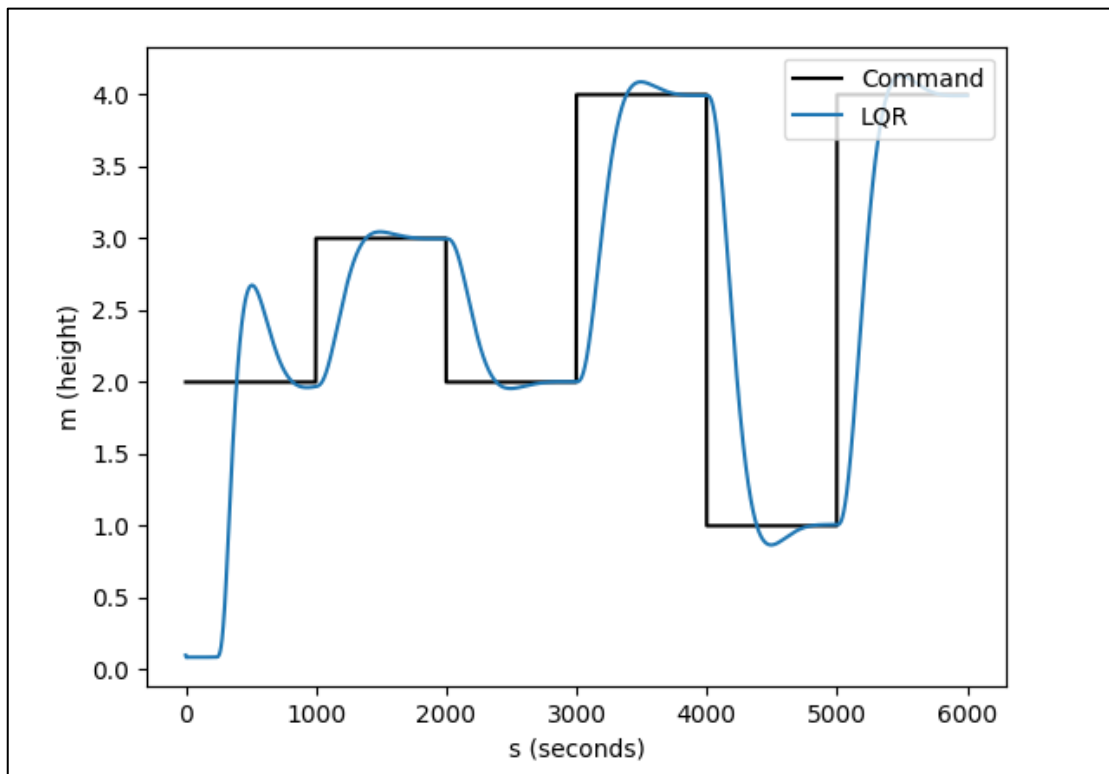


Figure 1. The completed simulation plot showing a stable system.

```
Time: 59.99
[69.34037917 69.45462241 68.93786665 69.08206459]
Time: 60.0
=====YOUR RESULT=====
ERROR: 0.179
SCORE: 50.000
INFO: 'ex1_controller' controller exited successfully.
```

Figure 2. The Webots terminal output for error (0.179) and score (50).

Exercise 2.

Exercise 2.1 (50% loss of thrust in one motor)

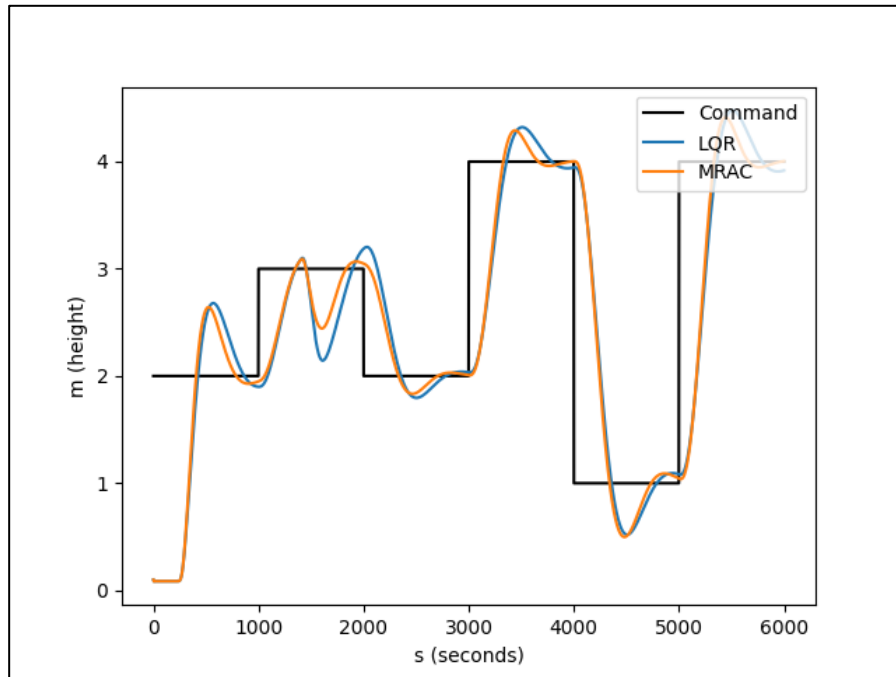


Figure 3. The LQR and MRAC result plot with 50% loss of motor thrust.

Exercise 2.2 (67% loss of thrust in one motor, LQR - failed, MRAC - maintained tracking)

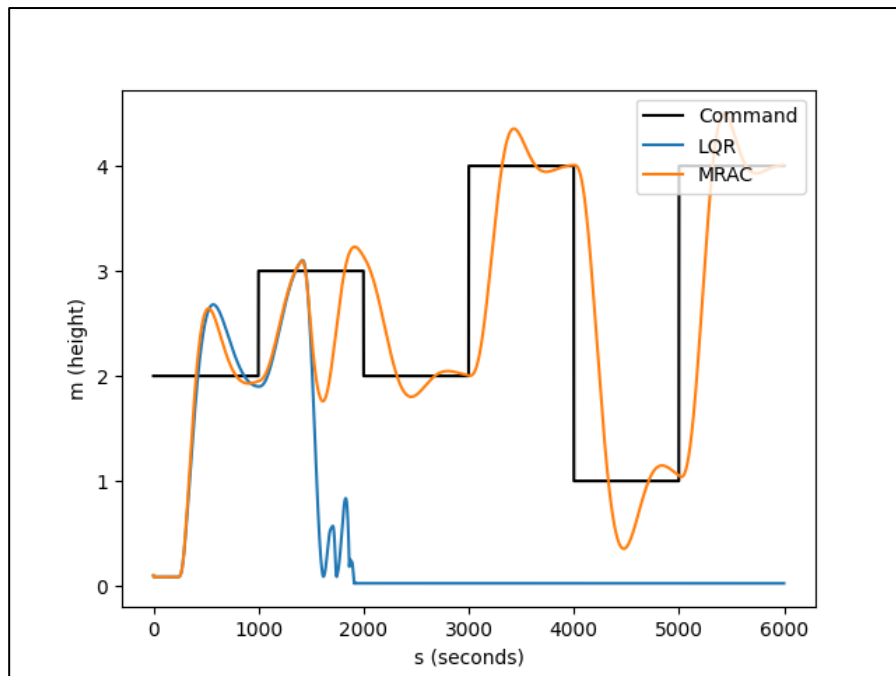


Figure 4. The LQR and MRAC result plot with 67% loss of motor thrust.