

EECS600 (ROS) Homework 3

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Action server and action client which prompt to input an amplitude, a frequency and a number of cycles are required in homework 3.

Input the goals which are frequency, amplitude and the number of cycle of commanded velocity to the action server by action client. The interface of the action client is shown in Figure 1.

```
xiangyi@ubuntu: ~  
xiangyi@ubuntu:~$ rosrn p3 vel_cmd_actionclient  
[ INFO] [1474919967.951158122]: waiting for server:  
[ INFO] [1474919968.183840365]: connected to action server  
  
enter the frequency  
2  
enter the amplitude  
1  
enter the cycle number  
1
```

Figure 1. The goals

Action server publish the commanded velocity to minimal_simulator and minimal_controller. The plot is in Figure 2.

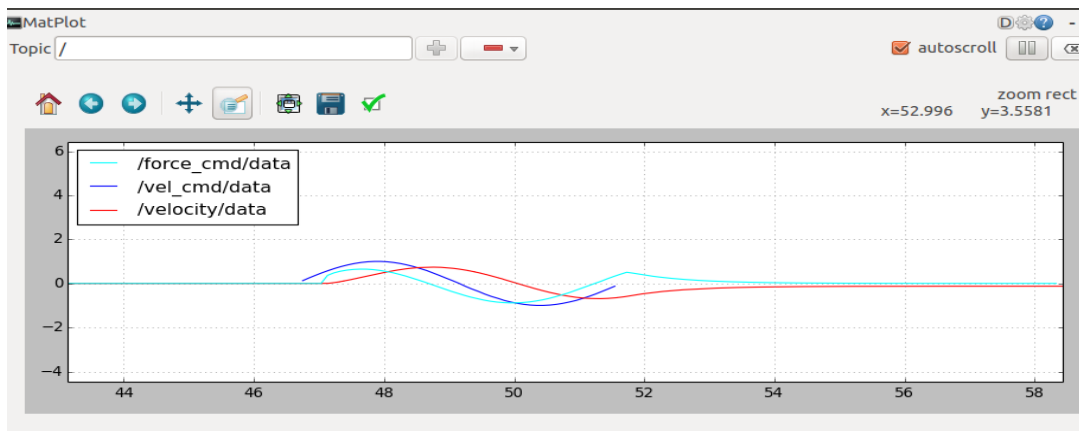


Figure 2. the plot of vel_cmd, velocity and force_cmd when cycle number is 1

Change the the number of cycle from 1 to 2, the plot is in Figure3.

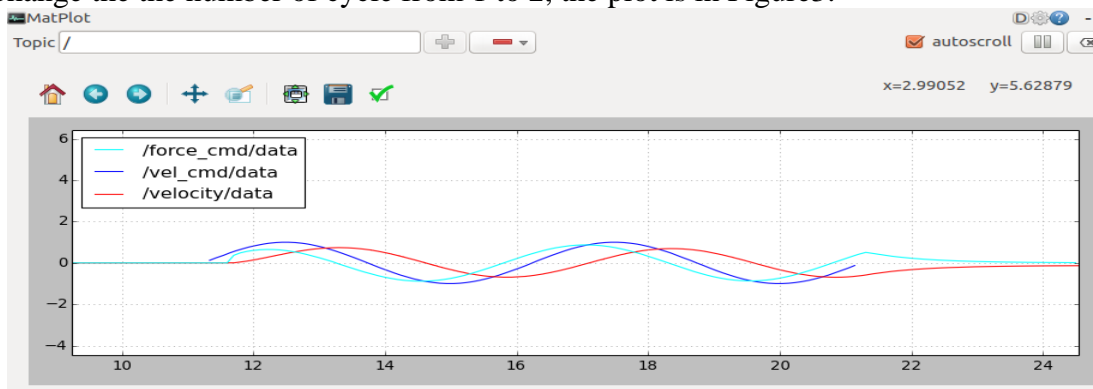


Figure 3. the plot of vel_cmd, velocity and force_cmd when cycle number is 2

From Figure 2 and Figure 3, we can see the commanded velocity run from 0 and then end in velocity 0 after the commanded cycles. And the commanded force and real velocity follow the commanded velocity from 0 to sinusoidal function in different phase then close to 0 again. If we zoom in the plot, it will be shown in the Figure 4.

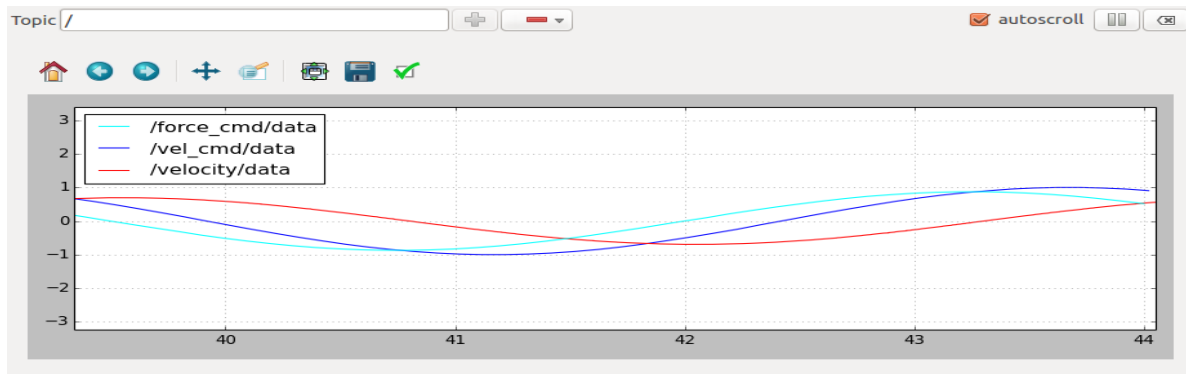


Figure 4. Zoom in the plot of vel_cmd, velocity and force_cmd

Also, due to the limitation of this control method, the velocity cannot reach the commanded velocity if the amplitude is large. As shown in Figure 5, the amplitude is 5, frequency is 2, the cycle number is 4. We can see clearly the difference between commanded velocity and real velocity.

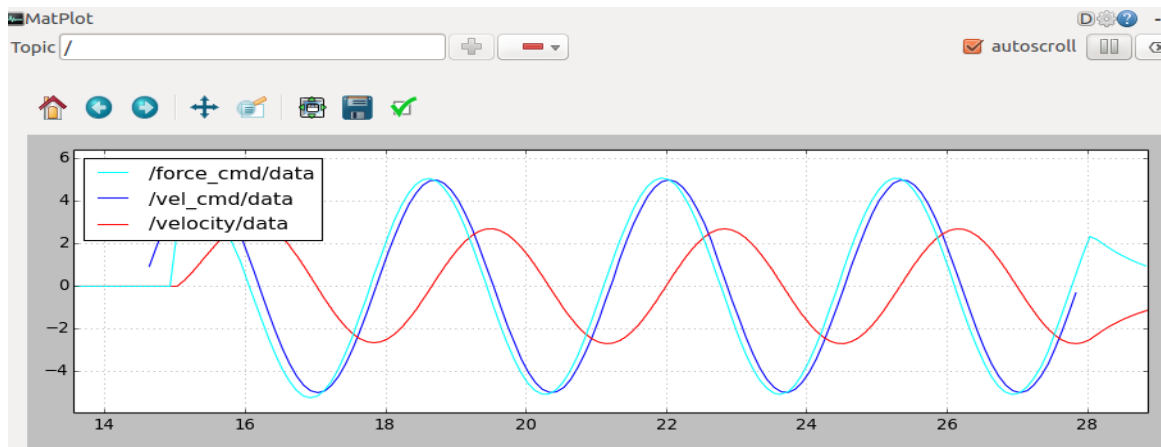


Figure 5. The limitation of the control method