

Additional notes on ME6404 LAB 3 Input Shaping on the Mobile Boom Crane

Downloading and analyzing data:

1. Once you have recorded data, click the “Download” button.
2. The green indicator next to the “Download” button will start flashing green and white. Once it has completed downloading, it will stop flashing and remain a solid green. If you see any other color besides green, the download failed. Common download failure reasons are if the crane is not in STOP mode. Or if one of the input#.cvs files has been left open.
3. Once the download is complete, navigate to D:\Download\vba
4. Inside that folder, you will see 6 files. The files that you need for this lab are input5 and input6 (and perhaps input1 and input2). Input5 is the radial payload swing as recorded by the camera (in degrees); input6 is the tangential swing. (Input1 is the desired slewing motor velocity (in deg/se); Input2 is the actual slewing motor velocity).
5. Copy these files into your own flash memory device and rename as you like. (DO NOT remove the files; they are automatically overwritten every time you press the “Download” button).
6. In any of these input# files, you will see the following two sections: a heading section and two columns containing the data. The section that pertains to this lab (and any other lab) is column B starting from row 5. These are the actual data values (either camera swing angle or motor velocity).
7. To plot the necessary figures, simply copy column B (starting from row 5 and down) and plot those values as your y-axis. Your x-axis will be time, starting from 0 and incremented by 0.04 sec. (i.e. 0, 0.04, 0.08, 0.12, ...).

EMERGENCY STOP – If you ever need to execute an emergency stop, push the STOP button immediately. Note that in this lab, you will only be slewing a total distance of about 15°. If you are holding the slewing button down and the crane does not seem to stop shortly after moving, release the button and press STOP immediately. Something in your design of the impulse sequences is not right!

DO NOT SAVE DATA BLOCKS – After you change the noshape_stop or the zv_stop blocks and download the changes to the PLC, DO NOT SAVE THE BLOCKS. If you save, the next group will have the answers given to them! If you accidentally save, reset the values as follows:

noshape_stop (in data view):

2
0
1000
100
-100

zv_stop (in data view):

4

0

500

1000

1500

50

50

-50

-50

CAMERA – If you see spikes (down to zero) in your swing data or if you notice on the GUI that the camera is not following the payload, do the following.

1. Stop the payload by hand and give the camera a few seconds. The camera should then find the payload and continue to track it.
2. If solution #1 doesn't work, place the blue (or red) blanket, hanging on the wooden dividers, on the ground beneath the camera's field of vision.

CONTACT INFO

Ask Kelvin if any questions or problems come up.

If Kelvin is not around and it is an emergency, call me (Ehsan) at 678-371-0150.