

Practice April 14, 2016 – Motor 3

Continuation of the Logidule DC motor command.

The goal is to write a **proportional regulator**.

1) Based on the corrected programs, prepare an environment with procedures GerePosition() et GerePwm().

Work only in C Language. Be sure to choose the Board MSP430G2553 (in *Tools* menu of Energia).

Manage the time ca be done with a counter of GerePwm() calls. Adjust the waiting of the PWM experimentally, to get a correct frequency (PWM at 100 Hz :your time unit has to be 10ms).

Test your environment with a simple program of your choice.

2) Write a proportional regulator.

You have to apply **$Command = (Target - Position) * PropFactor$**

Warning: do not use float numbers. Try to use a signed integer arithmetic on 16 bits (`signed int`). Then restrict the command to a value of -256 à +256, which will be decomposed by the value of the PWM and the rotation direction.

If you want to use a proportional factor, which is not an integer, use a rational number : multiply $(Target - Position)$ by a first integer value, then divide the result by an other integer value.

Give a constant position set-point. Watch the "spring" effect of the system !

Send the last program you write to pyr@pyr.ch