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Sabertooth+Kagaroo+DC motors as Servos

This tutorial shows how to use a DC motor as a Servo, using a Sabertooth+Kangaroo boards combination and EZ-builder

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Introduction

How to use dc motors as servos
I had a very hard time to figure out how to use a DC motor as a servo. My problem was that I wanted to control my full size R2's dome with an EZ-builder servo control, so it would be able to respond to camera tracking and position control.
After a lot of help from genius around here, and some hard way finding out how not to do some things I finally made it.
First I must tell you that without the guiding from some of the most brilliant builders in this forum, it would be impossible to me. Thanks guys.
Ok, let's do it!

Step 1 - Hardware

For this method is imperative to get on SABERTOOTH 2x12 motor control, a KANGAROO side board, and, at least one motor WITH encoder.
(You can try it using a pot instead of an encoder, I know that some guys used very successfully, but I could not)

Step 2 - Setup

Ok, set the dip switches both in Sabertooth and Kangaroo (of course, at this point you have ready installed the kangaroo on sabertooth's 0V, 5V, S1 and S2 terminals)
The proper setup is: kangaroo/ All switches ON.
SABERTOOTH/ 1-Off, 2-Off, 3,5 and 6- ON

Step 3 - Wiring

Connect the encoder's output to the KANGAROO's input (use the channel 1). Make sure that is correctly connected (5v, ground, A, B)
Some encoder's have the "I" wire. The ones I have don't. And it works perfectly.

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Connect the motor power (+ / -) wire to the A1 and B1 SABERTOOTH's terminals
   Power up the Sabertooth using the + and - terminals.

   ATTENTION! Be very careful doing that wiring! if you invert the poles you're gonna fry
your board!
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Step 4 - Tuning

Now we have to say to the system where to start and finish the motor position.
There are many ways to do that. I chose the "teach mode"

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The Kangaroo has  a little push button near the yellow led. Push it with a small screwdriver
until it gets blinking ONCE per second. This is teach mode.
     Now, press and release it again. It will start to blink fast. This initiate the learning
process.

     Manually, move you motor shaft (that should be previously at center point) right to the
ending point you want it to be (or, as many laps as you want it to do)
     Move it reverse until the center point.
     Move it the same way to the left (to the end point you want)
   Move it Back to center point

   Press and release the push button again to save it.
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Now, let the Sabertooth do the job! Your motor will start to move, first slowly, then fast, from one side to other.
When the yellow led stops to blink, it means that the process is concluded.

Step 5 - Power On

Turn of the power and turn on again. That's it!

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Now the trick: you can power the EZ-b From the 5v and 0V kangaroo output. Then, connect a
digital port (let's say, D0) to S1 on Kangaroo

   If you do not want it to be powered from the Kangaroo out, connect ONLY the digital pin to
S1.
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Do not connect the 5v or the GRound, specially if you are sharing the same battery to both boards, cause that will cause a ground loop and a short!

Step 6 - Programming

That's the easy part. Open your Ez-builder, set a Servo control, choose the digital port you have connected the Kangaroo (in this case, S1), and... Control your motor just like any servo you are used to.
That's, it folks.
Hope you enjoy it
TEVANS
Sent from my iPad