//Basic two motor control program for an x-y joystick, where

//x is turn left or right, and y is forward and reverse (throttle)

//Joystick x-y potentiometers are wired as a 0-5 volt dividers with the

// wiper arms going to Arduino input pins.

//Written for Arduino Uno in C

//ESC's are Blue Robotics programmed for 1100 - 1900 usec input

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#include <Servo.h>

//motor objects

Servo leftMotor;

Servo rightMotor;

//Outputs to left and right motor ESC's

int leftESCPin = 12;

int rightESCPin = 13; //LED pin

//input pins from joystick x-y voltage divider wiper arm

int xJoyPin = 4;

int yJoyPin = 5;

//value read from x-y joystick voltage divider wiper aarm

int yJoyVal;

int xJoyVal;

//Combination of x and y joystick voltage values

//going to right motor and left motor ESC's

int xyValRight;

int xyValLeft;

void setup(){

//Attach motors to an ESC signal

leftMotor.attach(leftESCPin);

rightMotor.attach(rightESCPin);

//Set ESC pins as output

pinMode(leftESCPin, OUTPUT);

pinMode(rightESCPin, OUTPUT);

//Initialize ESC's

for(int i=0; i<=3; i++)

{

leftMotor.writeMicroseconds(1500);

rightMotor.writeMicroseconds(1500);

delay(1000);

}

}

void loop(){

Serial.begin(9600); //For monitor debug

//Analog read in joystick voltage values (0-5volts converted to 0-1023)

analogRead(xJoyVal);

delay(10);

analogRead(yJoyVal);

delay(10);

//Map Arduino analog read to desired output to ESC's

map(xJoyVal, 0,1023,1100,1900);

map(yJoyVal, 0,1023,1100,1900);

//Interpret x-y joystick movements and send signals to ESC's

if (xJoyVal > 1500) //turn left

{

xJoyVal = xJoyVal - 1500;

xyValRight = yJoyVal + xJoyVal;

xyValLeft = yJoyVal - xJoyVal;

rightMotor.writeMicroseconds(xyValRight);

leftMotor.writeMicroseconds(xyValLeft);

}

else if (xJoyVal < 1500) //turn right

{

xJoyVal = 1500 - xJoyVal;

xyValRight = yJoyVal - xJoyVal;

xyValLeft = yJoyVal + xJoyVal;

rightMotor.writeMicroseconds(xyValRight);

leftMotor.writeMicroseconds(xyValLeft);

}

else //no turn, y throttle only

{

rightMotor.writeMicroseconds(yJoyVal);

leftMotor.writeMicroseconds(yJoyVal);

}

//debbug

Serial.print("Combined value to right ESC: ");

Serial.println(xyValRight);

Serial.print("Combined value to left ESC: ");

Serial.println(xyValLeft);

delay(1);

}