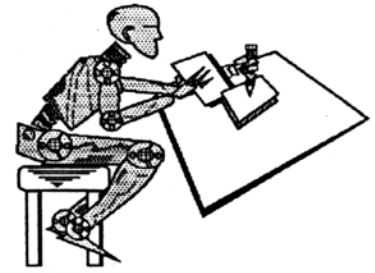


DPRG

DALLAS
PERSONAL
ROBOTICS
GROUP



April 1993

A Newsletter for Personal Robot Enthusiasts

April Meeting Highlights

If you attended the April meeting, you saw several homebrew robots including Mitch's computer-controlled Armatron, Roger's 6-wheeled D-Bot and Bud's "luther". In order to generate some pictures for the newsletter, Roger brought his camera and the robots began to 'ham it up'. Due to the limitations of our printing process, the pictures won't be reproduced perfectly, but they should liven up the newsletter a bit.

Attendees of the April meeting picked up their **FREE** Motorola 68HC11 microcontroller data books so graciously donated to the group by Gus at the local branch office. Free data books and catalogs are just one of the reasons to become a member of the DPRG.

Steve Rainwater brought the beginnings of his new creation based on an RC (remote controlled) 4-wheel drive truck. Members were impressed when Steve attached a battery from Roger's D-Bot to the drive motors. The torque was amazing! The 500 volt battery may have had something to do with it. We'll be keeping track of Steve's progress.

Steve Conrardy brought the DPRG library for members to pillage through - lots of good stuff in there!

Another Great Meeting.

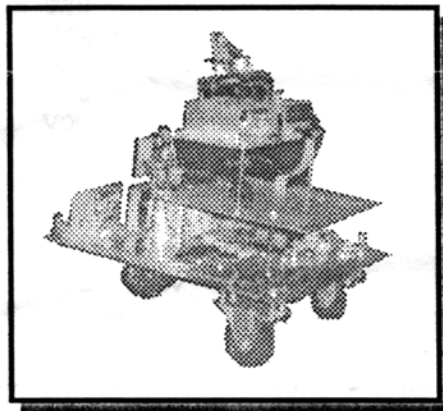
May Meeting Events

The May meeting will be on Saturday the 15th, 1:30pm at the Dallas INFOMART. As usual, many members are expected to bring their personal robot creations. We'll see what progress members have made.

A local distributor of LCD panels has agreed to send us a box of data books. These books contain all the information needed to use and program common displays which use the 66480 controller chip from Hitachi. So, come to the May meeting and pick up yours.

Motorola data books, DC electronics catalogs and other literature is also available at no charge to members.

luther



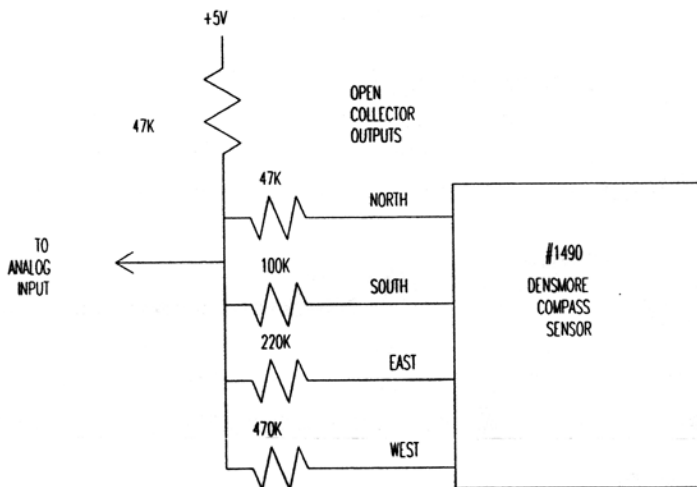
President's Note

Welcome to another issue of the DPRG newsletter. I'd like to use this small space to report on the group. As you probably noticed, the meetings are continuing to attract new members. The diversity of skills represented is quite impressive. The mailing list for the newsletter has grown to about 130 and usually gets 2-5 new names each month. We look forward to future growth and success. See ya at the next meeting!

Roger Arrick

Use an Analog Input for Multiple Digital Input

Maybe you've used all of your digital input for bumper switches or maybe you need to cut down on the number of wires to a controller board. Well, this may be the answer. An analog input can be used to read digital inputs or even multiple digital inputs by combining the signals to create an analog voltage. Your processor can read the voltage and decide the condition of the digital signals. The following example shows the Densmore compass sensor (which has 4 digital outputs) connected to a single analog input. The example code is written in 8051 assembly.



8051 Code

```

;READ AN ANALOG SIGNAL, TEST FOR VOLTAGE
;WINDOW, SET RESULT IN A AND RETURN.
;
RDC:  MOV  A, #1          ;READ ANALOG IN #1.
      ACALL RDAD         ;RETURN DATA IN A.
      MOVE R1, A         ;SAVE RESULT IN R1.
      ADD  A, #33        ;222 THROUGH 256?
      JNC  RDC1         ;NO - DO NEXT TEST.
      MOV  A, #1        ;YES - 1=WEST.
      RET                ;RETURN WITH RESULT.
RDC1: MOV  A, R1         ;GET RESULT.
      ADD  A, #63        ;193 THROUGH 221?
      JNC  RDC2         ;NO - DO NEXT TEST.
      MOV  A, #2        ;YES - 2=EAST.
      RET                ;RETURN WITH RESULT.
RDC2: MOV  A, R1         ;GET RESULT.
      ADD  A, #87        ;169 THROUGH 193?
      JNC  RDC3         ;NO - DO NEXT TEST.
      MOV  A, #3        ;YES - 3=SOUTHWEST.
      RET                ;RETURN WITH RESULT.
RDC3: AND  SO ON . . . .

```

As you can see, each possible condition has a range of valid values to compensate for resistor tolerances, etc.

Robotics / AI Bulletin Board

(214) 258-1832

Give the INTEROCITOR BBS a call.

You can:

- Download files
- Read Bulletins
- Send & Read E-Mail
- Make suggestions

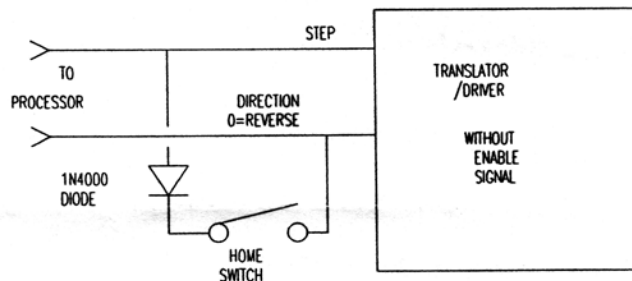
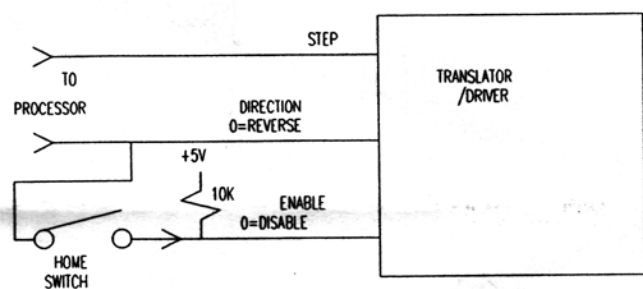
Try it, you'll like it!

D-Bot



Home a Step Motor the Easy Way

If you're building any type of robotics, you've dealt with stepper motors. They're great for small positioning jobs. Most steppers are controlled with a microprocessor which is connected to a translator/driver chip. This normally takes at least 2 digital output pins - the direction and step signals. You'll quickly find out that your stepper needs yet another signal to operate - a home signal. When your system first powers up, it doesn't know where the stepper is pointed and this home signal provides the feedback necessary to get the motor under control. Now you'll need a program that will move the motor while looking for this home signal. While all of this really doesn't sound too complicated, it's always best to simplify whenever possible. The following circuit can simplify the home positioning task of many stepper motor systems by removing a need for another input signal to the processor and a special home subroutine. This is accomplished by wiring the home switch into the translator/driver chip. Whenever the stepper motor is moved reverse, it will stop automatically when the home switch is activated. This will not work in cases where the motor needs to move reverse while ignoring the home switch, but for most applications it will. To home the motor, simply move the motor reverse enough steps to cause it to activate the switch no matter where the starting point was, zero the position counter in the software and your done!

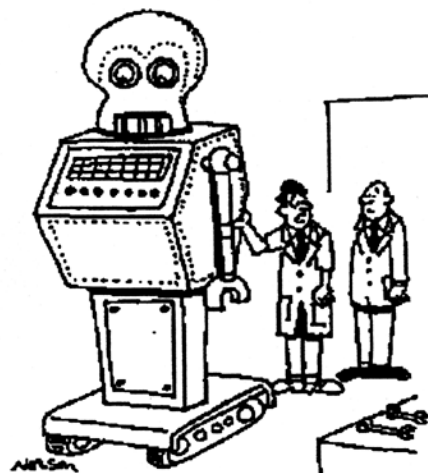


Submit your Brain

Yes, your brain. Are you experiencing guilt for hoarding all that great information in your brain without letting others benefit from it? If so, we have the answer - write an article for the DPRG newsletter. Where do you start? With your brain, of course. First, find something in there that you did and others can learn from. Second, write it down on a piece of paper. Third, send it to:

DPRG, C/O Roger Arrick
P.O. Box 1626
Hurst, TX 76053

Your guilt will be immediately removed as thousands of readers are enlightened and the world becomes a better place! ahhh

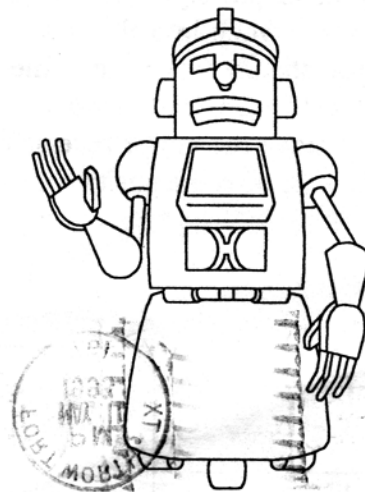


*"If you have to ask how much it cost,
you can't afford it."*

Inside -

- April meeting highlights
- Free LCD Data Books
- Home your Step Motor Easily
- Much more . . .

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At the Dallas INFOMART



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