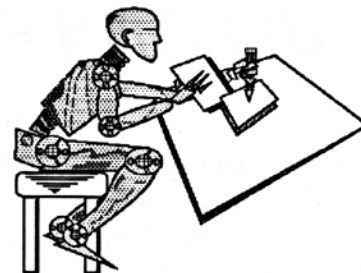


# DPRG

DALLAS  
PERSONAL  
ROBOTICS  
GROUP



February 1993

A Newsletter for Personal Robot Enthusiasts

## January Meeting Highlights

The January meeting included several demonstrations and some interesting discussions. The meeting also included the elections and appointments for the new year.

### **PRESIDENT** - Roger Arrick

Roger has been an active member of DPRG for the last year and has built a homebrew robot using commonly available components. Roger will focus his energy on publication of the DPRG news letter (this is the first one!), writing articles, giving mini-seminars on robotic subjects, and encouraging others to participate.

### **VICE PRESIDENT** - Bart De Boisblanc

Bart has been an active member for years and has become an important part of the meetings. His excitement is a great encouragement for other members. He will continue to be vice president and the alternate CCD representative.

### **CCD REPRESENTATIVE** - Mike Cronick

Mike will continue to be the official CCD representative for DPRG in 1993. His knowledge and interest will be a great asset for another year.

### **LIBRARIAN** - Steve Conrardy

Steve will be taking care of the large DPRG library. Dozens of books covering subjects such as artificial intelligence, speech synthesis and robotics are a valuable resource for DPRG members. Steve is considering making a portable book shelf which can be stored at INFOMART and moved to each meeting.

## February Meeting Events

The February meeting will be Saturday the 13th - 1:30pm at the INFOMART. Show up and bring your robot, robotic components or just your curiosity! Don't forget to see the vendor area on the lower level, excellent computer hardware and software bargains await you! The March meeting will be on the 20th and the April meeting will be on the 24th, so mark your calendar.

Roger will be giving a demo and explanation of his ultrasonic switching circuit which allows many transducers to be operated from one Polaroid driver module. This method reduces the cost of multiple-sensor robots since each driver costs about \$25. Roger will also be showing his dinsimore electronic compass sensor circuit which should be a great benefit to robotic navigation software.

Steve will be bringing the library of robot related books. One of the best ones is 'Android Design' which has many practical ideas for the homebrewer, check it out.

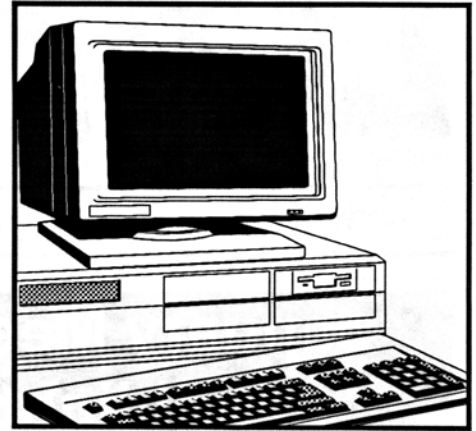
Bud Litman will try to bring his totally awesome homebrew robot for a demonstration. Bud has made tremendous progress in the last few months. His wheel-driven robot is controlled by a Motorola 68HC16 microcontroller board which controls a Polaroid ultrasonic ranger that is positioned by a stepper motor and a model aircraft servo. Speech is created using the V8600 speech processor from RC Systems. Many members believe that bud should have used the money to decrease the national debt instead.

Mitch will try to bring his new and improved 8031 microcontroller board. This board can be used to create almost anything due to its large breadboarding area.

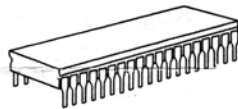
# BULLETIN BOARD CONSIDERED

By Roger Arrick

The topic of a computer bulletin board system (BBS) came up again in the January meeting. DPRG members have recently been using a BBS to exchange ideas and information. Since the main function of the DPRG is to distribute information on the subject of personal robotics, it seems logical that a BBS could play an important role. There simply isn't enough room in the news letter to publish every idea. A BBS dedicated to DPRG members and guests could be used, not only to exchange information and ideas, but software too. The BBS could be linked to other BBS's around the country that have robot forums. Many members demonstrated a willingness to contribute unused computer hardware to the BBS project. It appears that a motherboard w/memory, monochrome monitor, modem and hard disk can be donated. All that is needed is a case, power supply, keyboard, monochrome card and a disk controller to complete the hardware. After the hardware is completed we will need to find someone who is willing to be a sysop and can install and maintain the system. It is very important that the phone number not change frequently, so the sysop must be able to stay put. It may be possible to move the phone number to another location if the sysop quits or gets run over by his robot. The phone bill can be covered with funds in the treasury and new membership dues. So, if anyone has any thoughts on this subject, would like to donate some equipment, or knows a potential sysop, contact Roger Arrick @ (817) 571-3221.



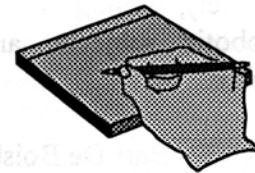
## Parts Source of the Month



By Roger Arrick

This is the first of what I hope to be a monthly column informing readers of sources for components necessary to build personal robots. This month we'll look at the latest catalog from ALL ELECTRONICS #193. With 62 pages, this catalog is packed with electronic and mechanical components. Noteworthy items include optocouplers on page 5 starting at 50 cents each. These can be used as home switches for stepper motor positioning or reading motion from a drive wheel. A very complete line of lever-style switches starting on page 9 can be used for bumper switches. Most are only \$1.00. The front page has a unique item - a power window, 12V gear motor for only \$10. It looks like these could be used as a drive motor for most robot platforms. Stepping motors, batteries and other components are also in this catalog. Call or write to receive your own catalog. All Electronics, P.O. Box 567, Van Nuys, CA, 91408 (818)-997-1806. A must read for robot builders! I'll bring my copy to the next meeting.

## A Call for Articles



Yes **YOU** can write an article and have it published to the masses at absolutely **NO CHARGE!** Can you believe it? Well, it's true. All seriousness aside, many of you homebrew hobbyist have tackled a robot project and won. We need your experience, schematics and source code! Many potential roboters believe that building and programming a robot is impossible or beyond their abilities. Most can be encouraged to start and finish their task if they see that others have conquered a similar one. Even simple projects such as connecting bumper switches or controlling a horn with a computer should be shared with others. Grab a pencil and paper (or keyboard and monitor) and start writing. Send all papers (napkins are ok), diskettes with text files and photos to:

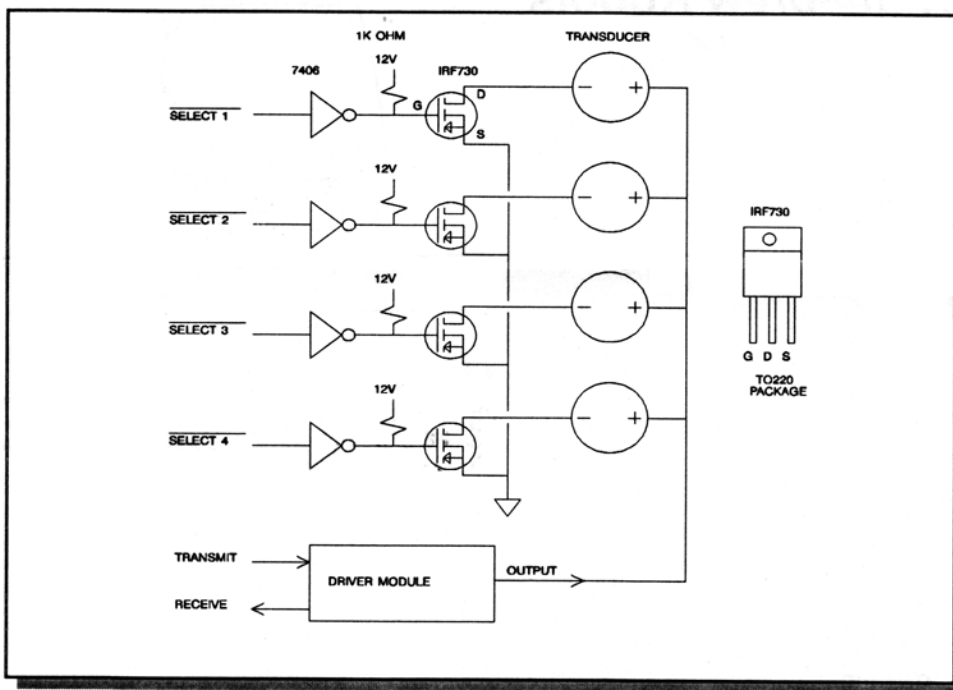
DPRG  
C/O Roger Arrick  
P.O. Box 1626  
Hurst, TX 76053

# ULTRASONIC SWITCHING CIRCUIT

By Roger Arrick

Every sophisticated robot has some sort of ranging sensor to detect obstacles and avoid collisions. On most mobile robots, an ultrasonic transducer is used since they are inexpensive and easy to implement. Many builders find that having only one sensor facing forward is not enough to detect all potential obstacles. Some solve this problem by positioning the sensor using stepper or servo motors under computer control and others solve it by adding more sensors. It's common to see a robot in a magazine that has dozens of ultrasonic transducers pointing in all different directions. Having multiple sensors can be expensive, the sensor can cost about \$15 and the driver module about \$25. If there was only a way to drive many sensors with the same driver. . . . The following circuit does just that. By selecting the correct MOSFET (transistor) this can be done relatively easily, with few components and without taking out an SBA loan. The MOSFETs are easily controlled using open collector TTL circuitry with a pull up to 12 volts. The gate voltage must be about 10 volts above the source voltage to completely turn the MOSFET on. The TTL circuit can then be controlled using a microcontroller or parallel I/O port.

**Drive many transducers with one driver circuit by switching with a MOSFET. Save a bundle!**



## WHAT ABOUT SOFTWARE?

Simply turn on the correct transistor to select a transducer, execute the normal transmit/echo cycle to read the distance, then turn the transducer off. That's it!

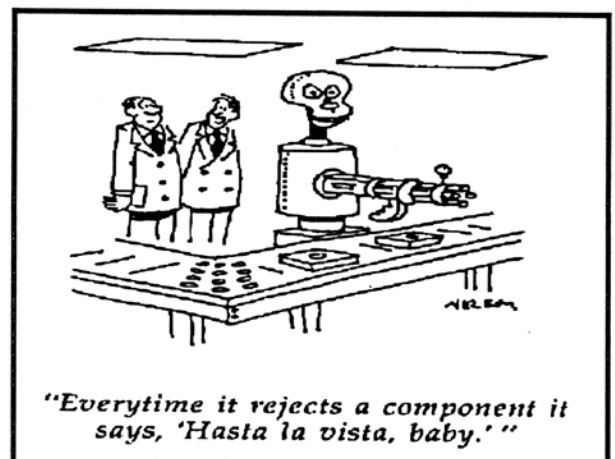
## WHERE DO I GET THE PARTS?

The IRF730's are available at Tanner's Electronics on I35 @ Beltline road in North Dallas or from Mouser Electronics mail order. A typical price is \$2.00/ea.

## CONTINUE TO GET THIS NEWSLETTER

If you wish to continue to get this newsletter we must have current information. Send your name, address, phone number and interests to:

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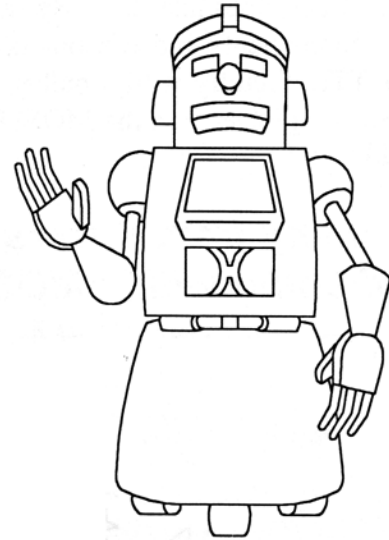


**February Meeting:**

Saturday the 13th, 1:30 PM  
At the Dallas INFOMART

**Inside -**

- *January meeting highlights*
- *Ultrasonic switching circuit*
- *Parts source for Homebrew Robots*
- *Much more . . .*



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