

# P.A.R.T.S

Portland Area Robotics Society

Issue # 02 By. Marvin Green (503) 656-8367.

Attention all Robot enthusiast, Portland Area Robotics Club is really taking off. Spread the word! Become an ACTIVE member. To find out what you can do to help, give me a call.

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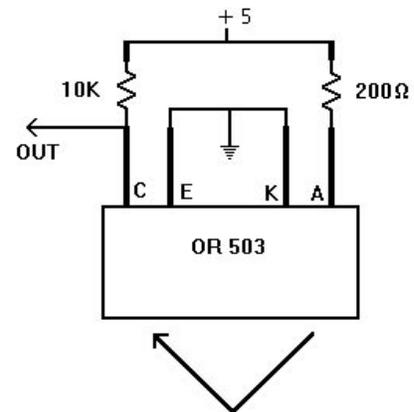
## EYES FOR THE BLIND... (ROBOT that is.)

Computers are numb, deaf and blind. Adding sensors to a computer, making them mobile, and adding a bit of programming, and you have a robot.

My robot Zippy *had* eyes that were facing down and could see a black line on white paper. These eyes worked well in 'the lab' but in the real world of the YOR line following contest, Zippy had a bit of trouble seeing that little black line. Zippy *had* digital eyes that could only see on or off. Zippy now has analog eyes. Using analog eyes give the robot the ability to see in different or changing light conditions, and also see a grey scale. For example, see a black line on brown paper.

This idea of using analog eyes was suggested by CBE-1, built by Karl Lunt,\* the winning robot at YOR.

Anyway the circuit here uses an OMRON reflective sensor that I purchased from Digi-Key for \$3.60. (Part #OR503). It is very small and easy to build. A single five volt power supply allows the part to detect the reflected IR signal off paper, and the range of about half inch or more. One side of the eye is an IR LED light source, and the other side is a photo diode. The analog signal out can be connected to an A/D converter chip or to an A/D pin on an 68HC11 microcontroller, like on ZIPPY. To make the sensor more accurate, place it close to the paper, and shield it from other light sources that may flood the sensor with too much light.



The software could read the analog value and determine the difference between a dark line and white paper. allowing the robot to 'see' a black line. This sensor can also be used for many other purposes like an obstacle detector, maybe a hand sensor etc. The sensors small size allow to fit just about any ware.

\* President of S.R.S, and has a good series of robot articals in Nuts & Bolts Magazine.

## PADS.

*Best Value !* . 1-800-554-SALES ask for shareware PADS

PADS shareware version of their printed circuit design program is first rate, if a bit complicated. While it can design a circuit board with the best of them, it's not easy to use for the first time PCB designer. The share ware package is designed to entice professional PCB designers to purchase their software, not to help the first time user or hobbyist. PADS does allow you to create PCB's from a schematic and it even

**BUG  
ALERT !**

does the auto routing with lots of the bells and whistles. If you are serious about designing circuit boards, and can devote some time, the package is worth while and has a great price ( FREE ).

I did run into a problem running the PADS demo program, it ate up all my unused disk space on my hard drive (80megs). I contacted PADS tech support, and they informed me that there is a bug in the **demo** shareware software when running the PCB demo in 800X600 VGA mode. PADS should run fine in standard VGA mode or 1024X768 mode. I have been running the program ( non-demo mode ) just fine in 800X600 mode.

## **Whiskers** . Angelus Research (714) 794-8325

Whiskers is a robot designed by Don Golding of Angelus Research. This robot had been designed for the hobbyist in mind. With a Motorola 68HC11 microcomputer running a version of FORTH with a complete Robot Control Language built in. The hardware is expandable, comes with a microphone and speaker, LED front sensors, rechargeable battery, and a host of other features.

I am looking forward to receiving and reviewing the Whiskers in more detail. For the list price of \$399 this robot looks a real winner, and Don has offered a special price of \$349 to members of PARTS or S.R.S.

## **Other Stuff.**

Stan Veit from the Computer Shopper wants to hear from people building robots. Drop him a line at Computer Shopper, One Park Ave., 11th Floor, New York, NY 10016. Let him know that robot builders are alive and well.

To quote NUMBER 5, " I need Input!" If you have any ideas for this news letter, any thing you want to share, any thing you want to know about, build, sell, give away, please call me. Better yet - write!

## **Wish List-**

I wish I found a Hero 2000 at a garage sale for \$15. I wish my cable received the Sci Fi channel, and I wish I had more time to work on my robot.

# **Three Laws of Robot Builders (or what they should be)**

- 1. Build that robot.**
- 2. Build that robot.**
- 3. Build that robot.**