

THE ROBOT COMPANION

the newsletter of the
Dallas Personal Robotics Group

November, 1987

Notice to members: Renewal time is coming up for many of us. The mailing label on your newsletter now contains the expiration date of your membership. If you do not renew your membership within 1 month of this date, your name will be removed from the mailing list. For example, if the date on the label is JAN88, then January will be your last newsletter unless you renew by JAN 31, 1988.

OCTOBER MEETING MINUTES

- The bylaws of the club were voted in, with the condition that they may be ammended whenever necessary to handle unforeseen situations or loopholes. If you want a copy of the bylaws, send a self-addressed, stamped envelope to Walter Bryant (include postage for 2 ounces). Walter's address is at the end of the newsletter.
- The treasury report was given...we have just under \$1000. in the treasury, and are looking for useful ways to spend it. We are currently considering a P-A system with wireless microphones for demos that we do. Another good suggestion is to get nametags for the meetings, so we know who everyone is.
- Stan Spielbusch (that's me) demonstrated his home-brew robot in its present state. This prompted a lot of interest in homebrew robotics, which we plan to encourage to the fullest.
- A talk was given by Buford Carter about Texas Instruments' ultrasonic ranging products, applications, and development. It was very educational and interesting.
- *** WELCOME *** new members Steven and Christopher Ellsberry. They do not presently have a robot, but are planning to pursue a homebrew project.

NOVEMBER MEETING AGENDA

The November meeting will be held on Nov. 21, 3:33 PM, at the Heath/Zenith store, 12022-C Garland Rd, Dallas. The scheduled activities include:

Walter Bryant has written a program for his HERO 2000 that teaches his dog tricks, and rewards the dog with a treat! He will be bringing a video tape of the program in action, and will also demonstrate the program at the meeting (if we can find someone to act like a dog).

Also, Walter's wife Bev will show her progress on a program to allow two robots to communicate by voice. The program is based on a combination of ASCII RS-232 protocol and morse code transmission medium (dots and dashes).

Stan Spielbusch will show what progress he has made on his homebrew robot, BANDIT.

IN SEARCH OF

by Stan Spielbusch

First of all, I wish to thank Buford Carter, who gave me 2 sonar transducers and the interface module that I was asking for! That was quite a nice surprise! Now, is there anyone else out there that needs anything?

I am still looking for the Radio Shack Model 200 manuals and the Radio Electronics issues mentioned last month.

Stephen Ellsberry, a new member, was asking where I got the motor/wheel assemblies for my homebrew (H&R Corporation), as well as a general "where do you find everything?" I also mentioned Turner Hardware as a good source of small hardware of any type, and loose wheels (for lawnmowers, etc.).

FROM THE LIBRARY

by Stan Spielbusch, Librarian

Well, I only received a couple of new programs to include this month. At the last meeting, several people wanted disks, so I'm pleased to see that the library is getting popular. To keep it popular, though, I need some more input! Is anyone doing any programming out there, or just running the demos over and over?

Here's the new programs in the library for November:

- EPROM51 - This is a listing of one of the demo EPROMS. Includes LAURA, Sneezing, Snoring, Alarm Clock, music, etc.
- EPROM52 - This is a listing of another demo EPROM. Includes arm demos, sound effects, bar reader, voice demo, etc.
- WANDER - Wandering demo - robot wanders around randomly, citing cute phrases when he gets stuck.

If you have programs to submit, put them on an MS-DOS format disk (double sided, standard format) and bring it to the meeting or send to:

Stan Spielbusch
2404 Via Barcelona
Carrollton, TX 75006

***** Please ***** include a description of the program, either as comments in the program or as a separate .DOC file. I don't have the time or patience to study each program to figure out what it does!

When you submit a disk, you receive credit for 1 disk in return. Let us know which one(s) you want, or if you just want your original disk back.

We currently have 2 disks in the library -- a combination HERO-1 and HERO-2000 disk (all programs in BASIC, text format), and a HERO-1 Assembler disk (see October issue for details).

If you want a copy of a disk, the best way is to bring a blank, formatted PC-DOS/MS-DOS disk to the meeting and either trade with me there or copy a disk yourself using one of the Heathkit computers. Of course, if you have programs to put in the library, bring those on your disk. If you forget to bring a disk, we will have to collect \$2.00 per disk. Hard-copy listings of the programs will soon be available. Mail-order -- \$3.00 per disk. Send orders to me (address above).

HACKERS AND HOMEBREWERS

by Stan Spilebusch

OPINIONS & SUGGESTIONS

At the October meeting, I "demonstrated" my homebrew in its present state. Having no locomotion, the demonstration consisted of having it speak its power-up message. Several members showed interest in homebrew robotics, and I was quick to encourage them! I would like to see homebrews become the norm, instead of the exception! Since I was swamped with questions about where to get parts and how to get started, I trust this will be a major interest in the group.

If you have the 'homebrew fever', but aren't confident in your abilities or knowledge, I might suggest buying a HERO robot (or other brand, if you can find any others), kit or assembled, to get started. There's a lot of additions and improvements that could be made, especially to the older ones (maybe buy a used one). This would give you a head start over most homebrewers (even me), so you won't be discouraged by the amount of time it takes to start from scratch.

Another idea would be to start with a 'proven' design such as presented in Radio Electronics "Build the R-E robot" series which started in December '86 (I have reprints of most of the articles). For a low-budget robot, see the "BERT" articles in Byte Magazine, April/May '87.

SOURCES OF PARTS

Parts - although I covered a lot of local retail shops and mailorder houses in the last two issues, I will continue to mention items of special interest that I find from time to time. I also would like to hear from other members that find good deals or unusual items for experimenting (a simple phone call would be fine -- see the Library column for my number).

A few things I've found recently:

H & R Corporation currently has a gear motor assembly that is constructed the same way as the assembly used for the Hero 2000 arms. Brian Vaceluke has already bought some, but he says they are too slow for most things. 12VDC, 0.5 Amp no load, 22 RPM, 75 in-lb starting torque, 21 in-lb running. \$25.50 each (no wheels).

H & R CORPORATION, 401 E. Erie Ave., Philadelphia, PA 19134. (215) 425-8870.

I just got a new catalog from Marlin P. Jones. I was impressed with the amount of goodies in it. Motors, relays, air valves, batteries, optics, IC's, tools, connectors, switches, etc., etc.

MARLIN P. JONES & ASSOC., P.O. Box 12685, Lake Park, Fl. 33403-0685. (305) 848-8236.

I had planned to list several non-surplus mailorder companies this month, but instead I'll just tell you to go buy the latest issue of Radio Electronics and look at the ads in the back. For low-priced components, I recommend JDR Microdevices and Jameco.

PRODUCT NEWS

If you have some money to spend, BASICON has a product line ideal for a homebrew robot. They call them "Intelligent Miniature Control Components for Industry". It is a modular system for control systems. The modules stack up or attach with ribbon cables to

make a compact but powerful system. Each module is about 3 by 4 inches small.

Some examples:

- CPU w/BASIC, 32 bit I/O lines, real-time clock, serial port, 8K RAM + socket for 16K EPROM/8K RAM \$281.00
- Same as above, all CMOS (20 mA) \$231.00
- I/O + memory expander (24 IO, 2 mem sockets) \$ 82.00
- EPROM Programmer module \$159.00
- A/D converter, 8 channels, 12 bit \$189.00
- Keypad (16-key) and Display (4x20 char) \$259.00

They also have some specials and package deals, development software, etc. It looks like it would make a great start! For information, write BASICON, 11895 NW Cornell Road, Portland, OR 97229. Or call (503) 626-1012.

WORKSHOP

In light of the apparent renewed interest in homebrewing (well, at least by me), I think I'll try to support a regular section for hardware ideas and suggestions. Of course, I want your ideas, too! More importantly, I want your improvements and criticisms on my ideas! Since there is plenty of other material in this issue, I'll make this one short.

VOICES

One crucial part of a robot is a voice. Besides being a good output device for normal messages, it is a primary uniqueness to robots, making them more than a computer on wheels. It gives them a personality. There are several readily-available chips for voice output. The primary criteria is that the voice be capable of an unlimited vocabulary. This means that it should be phoneme- or allophone-based, so words may be programmed by combining the individual sounds.

The HERO 1 robot uses a VC-01 chip by Votrax. This was the first commercial phoneme-based voice chip, and was easily programmable by using a parallel port. The chip cost around \$75, which still made it hard for the average tinkerer to afford. By the way, I have one that I don't use anymore, if anyone would like to get one cheap! See Byte magazine, Sept. 1981 for a construction article.

The HERO 2000 has a much fancier chip. The SSI263 chip, by Silicon Systems, Inc. It is phoneme-based, like the VC-01, but it also has 5 registers to set duration, inflection, rate, amplitude, articulation, and filter frequency. These controls can be used to make very human-sounding effects, even singing. It is programmed through a parallel interface, like the VC-01. If you want to spend the time to create great speech, this is the one to get. See Byte magazine, March 1984 for a construction article. Note that the HERO 2000 contains a text-to-speech algorithm in software to make it easy to program speech quickly, as well as a way to program the chip directly for effects.

If you just want to do a lot of talking without hassle, and aren't too picky about the way it sounds, then you can get your voice at Radio Shack. They sell a phoneme-based chip, the GI SP0256A-AL2 speech chip, and a companion chip, the GI CTS265A-AL2 code-to-speech processor. Together, they cost about \$30. The speech chip is comparable to the VC-01 chip, perhaps slightly better quality. The code-to-speech chip, however, is actually a microprocessor with a text-to-speech algorithm programmed in it, and a serial port for programming! All you have to do is send it ASCII text over a serial port, and you get understandable speech. The algorithm uses correct pronunciation about 85% of the time, and of course you can misspell things to make it talk right. This is the set I used on Bandit, because of its simplicity. The construction details are included with the chips. You can optionally use a 2K RAM buffer, a parallel interface, and up to 44K of EPROM which can be used to store the correct pronunciation of words, or entire phrases to speak when given a short code, such as "MSG034". This could be used to store common

phrases, making your programs much shorter (most long programs I've seen are 80% speech, anyway). I have application notes for programming the EPROMs, if anyone would like a copy.

If anyone knows of another option for voice output, let us know. Next month, I'll talk about something else, but I don't know what yet. It depends on how far along I am with Bandit. Rise, Bandit, rise!

Hope to see you all at the next meeting!

CLUB INFORMATION

The Dallas Personal Robotics Group is a non-profit organization of individuals interested in learning about personal robots, sharing ideas, working on projects, and informing the public about the world of personal robotics. We are open to anyone who has an interest in personal robotics, whether or not they currently have a robot, and whether or not they have any knowledge of robotics.

Meetings are on the 3rd Saturday of every month, at 3:33 PM, at the Heath/Zenith store, 12022-C Garland Rd, Dallas. A user's lab, with hands-on working with robots, is scheduled for the Sunday 2 weeks after the meeting. The location of the user's lab is announced at the meeting.

To become a member and receive the newsletter, have access to our program library, and be involved in our monthly clubs and user's labs, simply fill out the form below, and send it with \$10.00 to the address below. For more information about the club, write to Walter Bryant, club president (address below).

If you are interested, but not sure you want to be a member, feel free to visit our meetings. If you like, we can send you a couple sample issues of the newsletter.

Club officers:

President: Walter Bryant
Vice-president: Ed Rivers
Treasurer: Bev Bryant
Secretary: Stan Spielbusch

M E M B E R S H I P A P P L I C A T I O N

Dallas Personal Robotics Group
c/o Walter Bryant, 814 Mockingbird Circle, Lewisville, TX 75067

NAME (please print) _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

HOME PHONE (____) _____ - _____ WORK PHONE (____) _____ - _____

TYPE OF ROBOT (if any) _____

TYPE OF COMPUTER (if any) _____ Modem? _____ baud