

THE ROBOT COMPANION

the newsletter of the  
Dallas Personal Robotics Group

October, 1987

Written by Stan Spielbusch

The club sincerely apologizes for the lapse in newsletters the last few months. Due to forces beyond our control, we have failed to uphold our commitment to member support. We hope to make it up to you through the coming months.

This month, I have thrown together a newsletter, mostly from articles that were meant to be published 3 months ago. Hopefully, some of our members (particularly the elected officers) will take a little time in the future to contribute their own thoughts to the newsletter so the burden won't be so hard on one or two members (namely me and Greg Oliver).

We really do want to hear from everyone -- what have you been doing with your robot? Why not? What news have you heard in the industry (I have run across many articles of interest on AI, Vision and image digitizing, industrial robotics, etc., but I can't do all the work!). What bargains have you seen that the members might be interested in? What praises, gripes, or requests do you have concerning our group? What would you like to see our group accomplish, and how can you help? What can we do for you?

O.K., so much for my speech -- on with the good stuff.....

Meeting minutes (condensed version)

July meeting --

Joe Rowe demonstrated a program for the HERO 2000 that detects movement around it and turns toward the movement.

August meeting --

Joe Rowe demonstrated a program for the HERO 2000 which exercised the top sonar through BASIC -- absolute positioning, selective scanning ranges, etc. I plan to use this technique in my MAZE program to speed it up.

We are attempting to become members of the Dallas Computer Council, so that we can meet in the Infomart. We are expanding beyond the capacity of the Heathkit store, so we need a larger meeting place. This would also give us great exposure to other computer/robotics enthusiasts.

September meeting --

Primarily, Walter demonstrated his program for the Hero 1 which allows 2 robots to talk to each other using continental

code. Side note -- we have also done this with my homebrew talking with his Hero -- it's not limited to robot type! Also, Bev Bryant discussed her school project, which is based on the same principal, but expanded to an entire communications protocol using ASCII standards.

OCTOBER MEETING AGENDA

I will be showing my homebrew robot, Bandit, which was "born" Oct. 2, 1987. It doesn't do a lot yet, but I will explain the design so far and what I have planned. It has a brain, an ear, and a voice (making possible the communication with Walter's Robbie), but no motor controls yet. I wrote a low-level monitor for system functions and debugging, and it also has BASIC. In the near future, I will implement a multi-tasking operating system, such that system monitoring and control functions can run independently of the applications (i.e. BASIC) program. I also wish to discuss the possibility of implementing a multi-tasking system on the HERO 2000 robots (or even HERO 1).

We will also be voting on the by-laws this meeting. It was planned for last meeting, but was post-poned due to the low turnout. Everybody please attend!

FROM THE LIBRARY

Due to the laps in newsletter publishing, I have three months' news put together here.

At the June meeting, I received programs from several people. Unfortunately, I haven't had time to look at them all and put them in the library. In the July and August meetings, the only programs I received were from Bud Collins. Thanks, Bud, for your support.

At the next meeting, I will still have a combination trial disk with both Hero 1 and Hero 2000 programs (all BASIC), and separate disk with Ed Rivers' 6800 Assembler for the IBM PC, with a few Hero programs in assembly language. The assembler will continue to be offered as a separate disk, with all assembly programs.

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 below).

I am trying to get the programs on a BBS system, so disk-trading will not be the only way to get the programs. I'll let you know how it goes.

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

HERO 1 (BASIC)

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CHRSTMAS -- (Ed Rivers) -- Sings several Christmas carols.  
COUNT -- (Greg Oliver) -- Counts sounds, such as claps.  
HERODUMP -- (Joe Rowe) -- Hex memory dump program - very nice  
documentation, Joe!  
JINGLE -- (Greg Oliver) -- Sings Jingle Bells.  
JOKES -- (Greg Oliver) -- Tells several jokes, and laughs  
at himself.  
LAWS -- (Greg Oliver) -- Recites the 3 laws of robotics.  
READTIME -- (Ed Rivers) -- Short routine to read the Hero's  
clock.  
NUMBERS -- (Ed Rivers) -- Play a hi-lo numbers game.  
PENDANT -- (Ed Rivers) -- Demo of how to read the teaching  
pendant.

\*\*\* SETTIME -- This was an old version of READTIME (and mis-  
named), so it was deleted from the library.

HERO 1 (ASSEMBLER) -- on 'ASM' disk

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HERO -- (Ed Rivers) -- demo of an assembler routine for  
motion control.  
MOVE -- (Ed Rivers) -- movement demo in assembler.  
RACE -- (Ed Rivers) -- juggling act and race program used  
at the Robot Olympics.  
SIMU -- (Ed Rivers) -- demonstration of simultaneous motion  
control.

Misc. files (on 'ASM' disk)

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DCTNARY.TXT -- (Ed Rivers) -- Nice dictionary of words with  
their associated phonemes for the Hero 1. Is this  
supposed to be used with the assembler??

HERO 2000

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BACKRUB4 -- (Bud Collins) Have your robot give you a backrub.  
SHOWOFF -- (Bud Collins) This is a generalized version of the  
program STANDUP.H2 from our library. The location-  
and season-specific verbage has been taken out, and  
it becomes a general-purpose demo routine. Note  
that this program has some nice 'acrobotics' in it  
(credited to Walter Bryant). Congratulations, Bud,  
on doing exactly what we want people to do -- take  
programs from the library and adapt them to their  
specific needs, as well as an occasional improvement!  
REPEAT2 -- (Bud Collins) This is a small but useful routine for  
displaying messages on the robot's head display. The

message may be any length, and is scrolled across at a variable rate.

SALETAPE -- (Bud Collins) This is an application-specific version of REPEAT2. It shows how several messages may be displayed, and also includes some special effects.

\*\*\*\*\* NOTE: If you don't think I am doing justice to the programs you have spent so much time on, feel free to write the descriptions for your own programs -- it would make my life much easier, too! So far, I have had to guess what most of the programs do!

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

This is a new address, so be sure to void the address in the previous newsletter.

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.

Oops, I almost forgot -- I have also put the program MAZE1 in the library. This is the maze program used at the June user's lab, in which the '2000 successfully navigated a simple block-type maze. Look for future enhancements in later versions. I have already made some improvements in its intelligence, but have not had a chance to test them yet.

Well, all in all I think the library is off to a good start. Several people have made use of it already. Also, if you don't have an IBM PC or compatible, don't feel left out. Let us know what format you need, and we can probably accomodate you.

## ROBOT REVIEW

by Stan Spielbusch

### BERT -- Basic Educational Robot Trainer

In the April and May issues of Byte, you can find the complete construction details of this simple robot. The schematics and even the pc board foil patterns are here. If you aren't quite so adventurous, you can buy the pc boards, EPROM, and all mechanical parts for about \$100. All you need to add is the components (which are all easily found) and the batteries. I estimate the complete cost to be around \$200, even if you buy all of the parts new. While BERT is not even as sophisticated as the Hero Jr., it would make a good entry into robotics on a limited budget. It might also make a good pet for a Hero 2000!

FEATURES -- This guy is small, but as versatile. It's definitely not a "toy" like the Tomy "robots". It has a 6802 processor for programming, and the EPROM has a simple control language that a child can learn in 10 minutes. It has a voice, using the GI SPO256A-AL2 chip, three bumper-sensors, and even uses closed-loop control on the two motors! It also has a beeper and LED's for output. Of course, additional sensors can be added as desired, if you like to tinker.

PROGRAMMING -- BERT can be hooked up to any dumb terminal (or computer) through its built-in serial port. The language consists of simple 1-letter, 1-number commands for movement, voice (64-word vocabulary built in), sensor reading and conditional branching, port outputs, and program flow control. The author also promises an Assembler EPROM "soon"

All parts are available from: Amarobot, 2913 Ohio St., Richmond, CA 94804, (415) 451-6780. A BERT user's group has even started in Vancouver, CA. I plan to get a copy of their newsletter, just for grins.

\*\*\* HACKERS AND HOMEBREWERS \*\*\*

PARTS IS PARTS -- PART 2  
by Stan Spielbusch

Before I get started with the Mail-order surplus houses as promised (three months ago), I would like to list a local shop which was brought to my attention by a club member at the last meeting:

Delta Electronics, Inc. 205 Bedford Euless Rd., Hurst, TX 76053 (817) 268-4800. Jack Throckmorton, Owner. All I know about this place is what you see above. Supposedly a good parts source. Thanks for the input!

I would also like to encourage everyone once again to attend the First-Saturday-of-the-Month sidewalk sale at Ross and Central (see last month's column). At the June sale, I picked up a Tandy 200 computer (working and even with batteries!) for only \$175.00! They also had a Tandy 102 for \$125.00. Try it, you'll like it!

Ok, here are the Surplus mail-order houses I know about, in no particular order. I'm sure they would be glad to put you on their mailing list. They send out catalogs anywhere from once-a-month to once-a-year (or whenever they have more junk to get rid of, probably).

BULLET ELECTRONICS, Box 401244F, Garland, TX 75040. (214) 278-3553. I don't know if they consider themselves surplus, but they don't have a regular product line. It's been several years since I've dealt with them, so I don't know if they are still in business. They used to carry some parts and kits for articles in Elementary Electronics and such.

MARLIN P. JONES & ASSOC., P.O. Box 12685, Lake Park, Fl. 33403-0685. (305) 848-8236. My last catalog is an '85 version.



It has some pretty neat electrical and mechanical stuff in it.

JERRYCO, INC., 601 Linden Place, Evanston, IL 60202. (312) 475-8440. This place has a fair amount of electronic/mechanical stuff, as well as a lot of miscellaneous surplus (e.g. optics, photography, toys, office supplies.). This catalog is the most fun to look through. How about some "glow-in-the-dark stuff" or a 2000-foot roll of aluminum foil gum-wrappers? Quote, "published regularly, more or less six times a year". A definite must for the tinkerer.

H & R CORPORATION, 401 E. Erie Ave., Philadelphia, PA 19134. (215) 425-8870. The typical electrical/mechanical surplus joint. Lots of motors, power supplies, etc. Watch their prices, though -- they can be tricky, and you'll see a lot of this stuff at local places and the 1st-Sat. sale.

HI-TEK SALES, 119r Foster Street, Peabody, Mass. 01960-3357. (617) 532-2323. Typical surplus, plus a lot of larger equipment. Lasers, infra-red viewers, alarm systems, compasses -- any ideas? Also tools, TV and telephone accessories...

ELECTRONIC SUPERMARKET, P.O. Box 988, Lynnfield, MA. 01940. (617) 532-2323. More typical surplus -- nearly identical selection and prices as Hi-Tek Sales. Note the identical phone numbers. (And see below!)

BNF ENTERPRISES, 119 Foster Street, Peabody, Mass. 01960-3357. (617) 531-5774. Notice that the address is the same as Hi-Tek Sales, except for the 'r'. The stock is also similar. However, they have different phone numbers, and their Christmas sale catalogs had different discounts (Hi-Tek 10%, BNF 5%). I don't know what gives. The catalogs are also a different format!

IN SEARCH OF
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by Stan Spielbusch

THANKS David Allen and Greg Oliver, who brought the things that I requested last month [June]! This column really works!

David Allen is looking for a track system for mobility on rough terrain. He wants something about 1- to 2-feet long, with track treads at least a couple inches wide. I also gather he wants something already assembled, rather than have to build it from scratch. A large toy tank would be ideal. Anyone out there have any ideas?

I need the Feb. and August, 1987 issues of Radio Electronics magazine. I'm missing these issues of the R-E robot series.

Also, I need the manuals for the Tandy 200 computer that I picked up at the 1st Saturday sale. Specifically, the Telcom, Text, and Basic manuals. The '200 has some differences over the '100 and '102, so those won't do.

Last but not least (this month) -- I need some things for my home-brew...If anyone has these lying around (perhaps from a well-planned but thwarted attempt at their own home-brew), I would be interested in purchasing them (yes, that means cash!).

At the moment, I would like to find 2 or 3 polaroid sonar transducers (like the Hero 2000 and Hero Jr. have). I don't need the interface module, just the transducers. I also need 2 12V "Gel Cell" batteries, preferably around 4 or 5 Amp-Hours. I bought a couple 'real cheap' at the sidewalk sale, but they were unchargeable. Let the buyer beware.

## INDUSTRY NEWS

by Stan Spielbusch

From "Electronics", October 1, 1987

Siemens is experimenting with an interesting new 'vision' technique. Their premise is that "Copying Mother Nature isn't always good engineering practice...after all, airplanes don't flap their wings and submarines don't wiggle their tails." Rather than using a 2-dimensional optic array to recognize objects, they use a laser beam. Each second, it calculates 200,000 x,y, and z coordinates of the objects surface. This requires very little computer power and is not the least bit sensitive to object coloration, light sources/shading, or object texture. The image is automatically in a 3-D form, and it takes only 1/5 of a second to recognize a 10-by-10-by-10 cm object of any shape in all its details. I suspect that this is a variation of the supermarket scanners, using multiple lasers, triangulating from different directions.

This could be a major breakthrough for industrial applications, such as part sensing/orienting, inspecting components for proper alignment and mating, etc, etc. How about for personal robotics? A laser is typically too power-hungry to lug around, let alone several, but what about laser diodes? Sounds interesting, at least.

## BARGAIN FLASH

Anyone ever hear of Damark international? Apparently, they buy liquidated items from odd places, then offer them to customers at low prices. Anyway, I accidentally got one of their magazines (addressed to the previous resident). One of the things I found in it was a HERO JR. robot! They bought Heath's stock of ASSEMBLED units, with I/R detector, wireless remote control, and 3 game-type cartridges (sorry, no BASIC or RS-232). Their price is \$298.00. Remember, this is assembled, not a kit! Anyway, if you're interested, write for a catalog or call them.

Damark International, Inc., 7714 Brooklyn Blvd., Minneapolis MN, 55443. Corporate Office (612) 560-5415.