THE ROBOT COMPANION

the newsletter of the
Dallas Personal Robotics Group

April, 1988

FEBRUARY MEETING MINUTES

March 12, 1988 2:00 p.m.

o Bev proposed to send out Newsletters to certain organizations and businesses that are in positions to help promote interest and new membership for the club. Stan stated that he had already sent out sixty newsletters to all of the Heath/Zenith stores in the U.S.

o Stan addressed the group with the state of the club library.

o Bud gave an update on the state of the Hero Jr. robot. He stated that no software modules or hardware interfaces are available from Heathkit.

o Bud Collins was chosen as the Computer Council of Dallas alternate for Ed Rivers.

o It was decided that each SIG leader would be responsible for coming up with a demonstration for the club meeting once every third meeting.

o A field trip was scheduled to the Fort Worth Museum of Science and History on the 26th of March to see the exhibit "Robots and Beyond". Turnout was as good as any user lab and the exhibits were fascinating.

o Bev proposed a logo contest that would provide a prize to the creator of the next DPRG logo. It was suggested that some grade school class could also enter the contest.

o Walter presented his compass for the Hero I. He asked for a volunteer to modify the compass for a Hero 2000. I (Brian) accepted the challenge.

o Bud presented the K.C. Bear Phone. However, the phone line in our meeting room was dead. The demonstration was still very interesting.

o An informal discussion on the applications of speech recognition was held.

MARCH MEETING AGENDA

The next meeting will be held at 2:00 P.M., April 16th at the Infomart in Dallas.

NOTE: Plan to get to the Infomart early, so you can spend some time at the Vendor area...you can find some good bargains, and the vendors help support the facilities for our meetings there!

Business at hand --

Volunteers needed!

We need volunteers to help man the morning DPRG booth in the Infomart lobby on the meeting days. We have some volunteers for April and May -- if you are interested in manning it some time, let us know. We could also use some backup volunteers for April and May.

The Fort Worth Museum of Science has asked that someone from our group man the display at their Robots and Beyond exhibit. The display consists of a glass "arena", in which we could show the HERO robots doing simple demos. The robots placed there by Walter Glod are out of service, and they want us to provide something for them. This would be a great chance to let people know about our group, as well as personal robotics in general! Please consider volunteering for this. They need someone for the remaining Saturdays and Sundays of April.

Cleanup at Infomart -- this is NOT an option! ALL members attending the April meeting must stay after the meeting (about 1/2 hour or so) to help straighten up the meeting rooms at Infomart. We must do this as part of our arrangement to meet there!

DEMOS --

We will be showing a videotape sent to us by Walter Glod. It contains excerpts from various TV shows, and includes discussions about robots in the home, robots of the future, etc. Included in the film is the Androbot robots, HERO 1, RB5X, and more.

!!!! Birthday Party !!!!!!

A Birthday party for the Dallas Personal Robotics Group will be held at the Fort Worth Heathkit store on April 23rd, 2:00 P.M. There will be an ice cream cake, party favors, newspaper and TV press, and lots of robots! Bring whatever semblance of a robot you have and join the fun! We expect to have about 25 people there, so it should be a great party!

HERO 1 / HERO JR NEWS

by Stan Spielbusch

One of the major problems with the HERO 1 (and Jr.) is the open-loop design of the drive system. This makes it nearly impossible for the HERO 1 to drive in a straight line or make accurate turns, especially on carpet. This greatly complicates any efforts for an autonomous navigation system, let alone getting from one room to another! I feel that the only way to keep the HERO 1 "alive" is to implement a closed-loop system, such as optical encoders for the two "idle" wheels.

I suggest that the HERO 1 SIG design such a system that can be added to a HERO 1 in a reasonably easy and reliable manner. The project must use easily-obtainable (or easily-made) parts, so that anyone can implement it. The software to use it should be placed in an EPROM, perhaps the "expanded" WORDS EPROM. If anyone has already completed such a project, or even designed it, please let us know!

Bad news for buyers of liquidated HERO Jrs. -- the programming language cartridge, BASIC cartridge, and RS-232 interface can no longer be purchased through Heathkit. So far, I do not know of anyone who has these items. If anyone does, we urgently request that you allow the club to borrow them long enough to reproduce them (or, in the case of the RS232 interface, make up plans for someone to build their own). Thus, our members can get some use from the HERO Jr besides "singing" songs and bouncing off of walls.

HERO 2000 NEWS

by Stan Spielbusch

Some interesting things have been going on lately, and once I get my '2000 built, I promise much more will happen! Some work in progress items are:

Speech Recognition -- Brian Vaceluke is designing a speech recognition system based on a slave processor board that will plug into one of the unused motor controller sockets. It will have a 256-word vocabulary (for starters), grouped in sets of 16 words (menu/submenu type arrangement). Way to go, Brian!

Home Navigation -- Walter Bryant is still perfecting his home navigation system. He doesn't know it yet, but I plan to really help him out after I get my robot going. (Primarily, make it more flexible and easily trained for another home).

Continuous Consciousness - Joe Rowe is still working on this.

Compass -- Brian Vaceluke is interfacing a compass to the HERO 2000.

Increased Memory -- I am working on a modification of the memory board to accept 32K by 8 RAM chips (or EPROMS). Unfortunately, these RAMs are getting tough to find!

New, Improved HERO operating system --
Assuming I can find out enough about it, I plan to make some modifications to the HERO 2000 operating system. One of the major possibilities is a multi-tasking environment. Some other things I plan to look into are:

o Emulate the IBM BIOS interrupts so that more PC programs can run on the HERO (with disk drive).

o The HERO-DOS must be re-booted after the robot wakes up -- this is a problem if you are running a program in which you have HERO go to sleep and wake up at a certain time to do something. When he wakes up, he forgets what to do! This must be fixed.

o The HERO-DOS cannot be used via the radio link. This would be helpful.

o I can't stand the "little twirly thing" rotating all the time. Besides wasting a lot of energy, the way BASIC interfaces to it is incredibly slow, because each time you ask for a reading, it has to wait for the sonar (or light) to get around to that angle. It would be a lot better if it simply moved to the angle when a reading was requested. Since most programs don't choose angles at random, this would not be inefficient. Besides, you could then see what the program is really doing.

I have a lot more ideas than I have room to describe. If you have any improvements you would like, bugs that need to be fixed, or other ideas, let me know. My goal is to make an enhanced version of the operating system, without impairing any of its current functions.

FROM THE LIBRARY

by Stan Spielbusch, Librarian

HERO 1----

Richie Dean, of Vero Beach, FL has submitted CALC, an integer calculator program for the HERO 1. Use the HERO's head keys as a simple 4-function calculator. I must commend Richie for the documentation with the program! The best I've gotten in a long time! Also a very original idea (for robots). This fits right in with my "IDEAS" article below. Thanks, Richie!

HERO 2000---

A new version of the MAZE program has been put in the library (MAZE3.H2) by Stan Spielbusch (me). It is a much improved implementation, but has not been tested. I won't have my HERO 2000 together until late May. Some of the new features that make the robot more "intelligent" are:

- Doesn't scan a place that it's been before (to save time).
- Keeps track of walls, and doesn't take time to scan a known wall.
- Uses the wall memory to test a path for being a dead end.
- Double-checks for a clear path with base sonar before moving.
- Backs up instead of turning 180 degrees (unless path is unexplored).
- Saves wall memory for a subsequent journey.
- May set the movement speed (how trusting are you?)

IDEAS --

I have heard several comments about the difficulty of coming up with program ideas for our robots. I think the problem here is that people want to immediately see the robot do something "useful" or "fantastic". We're too spoiled by the state of personal computer software, and want to immediately write an "AutoCad" equivalent (AutoGuard?) for the robot to amaze everyone (and answer the question "What does it do?").

SLOW DOWN! The work involved in such a "do-all" project is so immense that the thought of it is stopping everyone cold! Remember the times when personal computers first came out? There was no AutoCad, Lotus 1-2-3, or Flight Simulator. People took great joy and satisfaction in writing Space Invaders, Spirograph, and Biorhythm programs. By tinkering with these "silly little programs", they learned about their machines, and eventually had the knowledge and courage to take on the bigger tasks. (Hardware advances didn't hurt any, either.)

Here's some "silly little program" ideas that were popular for computers (you know, the kind that can't move or talk) way back when. They don't do anything "useful", but if you don't program some silly stuff, how will you ever learn to program the good stuff? After all, Lotus 1-2-3 and AutoCad weren't somebody's first program! And by the time you get these done, maybe vision and speech recognition technology WILL be good enough to write your AutoGuard program!

- Guess-the-number (Hi-Lo) game. Robot guesses, you clap once for high, twice for low, three times for correct.

- o Pig Latin translator. Can your robot speak more than one language?

- o Random speech. Walter and Bev Bryant have written a story-teller for the HERO 1. The same concept could be used for "random" speeches for demos, etc. If the robot says something slightly different each time, it will be more interesting (and less boring for the ones that have to listen to it all day!).

- o Tell your biorhythm. Again, Bev Bryant has written a HERO 1 fortune telling program. Put this on the HERO 2000, add biorhythm, numerology, etc.

- o Guess-the-animal. The robot asks questions, you clap once for yes, twice for no.

- o Random poetry/limericks (this idea by Bev Bryant).

- o Towers of hanoi -- with real towers! Try coke cans painted different colors.

- o Star Trek -- let HERO be the narrator -- remember the Phasor sound demo? Could add some real action to the game for kids.

- o Battleship -- get a real Battleship game for the Human -- have the robot play in his mind. Add lots of annotated remarks, etc. A good project for simple speech recognition. Only about 25 letters, numbers and words are needed. (Or just use the keyboard to enter your moves).

- o Spirograph -- have HERO draw spirograph patterns on a piece of paper on the floor.

For more ideas, try looking through some old computer magazines like Creative Computing, Personal Computers, BYTE, Kilobaud, etc. They were full of simple programs. You also might get some ideas for hardware add-ons.

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If you have a program to submit, put it on an MS-DOS format disk (double sided, double-density 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 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 '87 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 trade with me there. If you forget to bring a disk, we will have to collect $2.00 per disk. Mail-order -- $3.00 per disk -- no need to include a disk with order. Send orders to me (address above).

HACKERS AND HOMEBREWERS

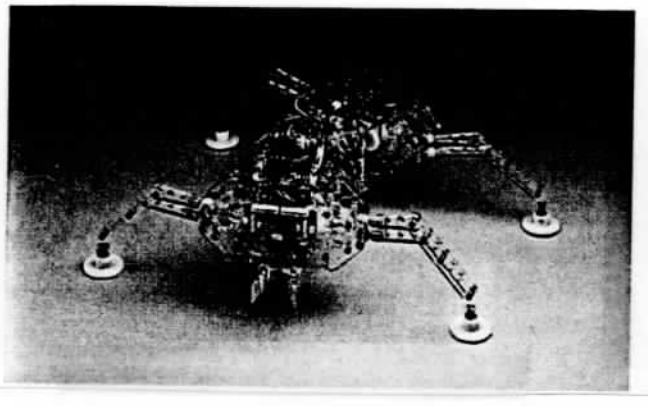
by Brian Vaceluke, Homebrew SIG Leader

The homebrew SIG met after the DPRG meeting adjourned. There was much deliberation on what the goal of the group would be and what project would be undertaken. If it was to be a robot: what shape would it be; what processor would it use; and what type of software convention and hardware conventions would it follow. A walking hexapod was proposed. Someone else proposed that any robot project at all would be too big of an undertaking. I proposed that my homebrew robot could be loaned to the group so that small software and hardware projects could be carried out on it as a test bed. And eventually the group could build a robot similar in hardware (bus) and software (FORTH) compatibility. This plan has been tentatively agreed upon. I plan to bring my robot to the next meeting for final approval or rejection.

INDUSTRY NEWS

by Stan Spielbusch

Well, we've seen "robot" cats that purr and follow you around the room and hamsters in a ball that randomly bounce off the walls (look out for the stairway!). How about a robot dog that WALKS! This appears to be a large walking version of the club's programmable Movit, with speech and infra-red sensors. And, it has a speech recognition system! I'd love to get my hands on this one, but the $1350.00 price tag says "hands off". Available from a high-tech gizmo house called Hammacher-Schlemmer, 147 East 57th St., New York, NY 10022. Phone (212) 421-9000. Orders 1-800-453-3366.



THE ROBOTIC DOG. This programmable robotic "dog" recognizes and responds to your verbal commands by walking, turning in different directions, picking up objects, exploring and standing guard (detects human presence). Using a voice-recognition system, it can understand and "obey" 15 different commands such as "backward", "turn left", "raise" (picks up object) and "explore" (walks about randomly) from as far away as 32 feet. Its 4K ROM, 2K RAM working memory is pre-programmed to respond to each command, and it can also be programmed with up to 20 learned sequences by the individual owner using simple voice commands. Incorporating a passive infrared sensing system, it can detect the presence of a person entering the room and responds by speaking a warning message. The infrared system also warns it to avoid walls and furniture while it is walking randomly. Its allophonic digitized "speaking" voice allows it to ask and answer questions while in its "teach" (programming) mode. Three 1.5-watt DC motors power all of its mechanical functions including the opening and closing of its mouth which can pick up small objects on command. It will run for three hours on six AA rechargeable NiCad batteries (included). Recharging unit plugs into household outlet. Constructed of perspax plastic and aluminum. Please allow 10 weeks for delivery. Height: 14 inches. Width: 19 inches. Length: 6½ inches. Weight: 3 pounds.
37633Y..... $1350.00 Postpaid and Unconditionally Guaranteed