THE ROBOT COMPANION

the newsletter of the
Dallas Personal Robotics Group

August, 1988

JULY MEETING MINUTES

June 11, 1988 2:00 p.m.

Last month's newsletter had the July meeting minutes in it. However, at the July user's lab, held at Walter/Bev Bryant's house, we had a lot of activity. We started working on the Checkers program for the HERO 2000:

o We determined that a standard checkers board can be used (the $1.00 variety which can be bought at any toy store and most grocery stores), and the toy blocks (also used by the BLOCKS program) will work nicely with it.

o The board must be raised up from the floor about 8 or 9 inches so that the arm can reach all 4 corners properly. Also, the board must be placed to the side of the robot, rather than the front. We were actually lucky that it could perform as well as it did. It was real close.

o We determined the optimum position of the board, and the X,Y,Z coordinates of the 4 corners. From these coordinates, all of the squares may be calculated, so the program does not need to have each square defined. The program XYZ-ARM had all of the necessary equations in it for cartesian coordinate mapping.

o There is very little clearance for the gripper when it picks up blocks. I suggest that an end-effector, such as the one used for holding the felt-tip marker, be used as "finger-tips" to allow more tolerance.

o The next step is to find a suitable checkers algorithm, and start adding the movements to it.

AUGUST MEETING AGENDA

The August meeting will be held at 2:00 P.M., August 13th at the Infomart in Dallas.

No agenda has been set for this meeting. Come see what crops up! We will probably have an open discussion about upcoming projects, including the Checkers program.

HACKERS AND HOMEBREWERS

by Stan Spielbusch

I have just received an Infra-red remote control kit that I ordered from Alltronics. It contains an assembled hand-held remote (originally for a satellite antenna controller) and a PC board and parts for the receiver end. They have also provided some schematics. Although I haven't had a chance to experiment with it yet, I think it may be worth the $19.95 price tag.

I may use it as an alternative interface to the HERO 2000 (it's easier to carry than the ASCII remote), but primarily it will help me decipher the signals from all of my other remotes, so I can have the HERO control the stereo, TV, and VCR. Then, when I get the cordless phone interfaced, I can turn the VCR on from a phone (I hate it when I forget to set the VCR before I leave!).

I also ordered a motion detector for $5.95. Unfortunately, I think it is very narrow-beam (good for detecting door-way entries). Still, a cheap accessory, and probably more fool-proof (and quieter) than using successive sonar readings to detect motion. It's a pity it activates when I turn the lights on and off.

For information, contact Alltronics, 2300-D Zanker Road, San Jose, CA 95131. Phone number (408) 943-9773.

Loren Heiny, who was written up in the last newsletter for his tic-tac-toe game using vision for input, has sent me another interesting letter. He is putting together a comprehensive set of image processing routines for the PC, united with a very nice menu-driven system. He has recently added a macro language to make applications easier to implement. Although the program is designed to be used real-time with a camera, it will run completely from image files. He has put together a short demo of its capabilities. I am very impressed with the functions, which include edge-detection, histograms, enhancement, averaging, etc. He has not decided how to distribute the software, and there is still work to be done on it, but you may contact him for more information. Fantastic work, Loren!

Contact: Loren Heiny, 920 Terrace Rd #211, Tempe, AZ 85281.

HERO 2000 NEWS

by Stan Spielbusch

I have briefly experimented with using Turbo Pascal for HERO 2000 programming. I have found that the WRITELN and READLN commands work properly with the terminal port. This had previously been a concern, since BIOS calls are not supported. However, the Turbo Pascal apparently uses the DOS calls, so it works properly. I haven't tried it yet, but I suspect that the remote console will work equally as well with read/write.

I have also run into a wall (so will the robot). When attempting to write a SONAR routine in Pascal, I found that the Hero 2000 technical manual lacks some vital information. It explains how to interface to the sonar motors, but not how to read the sonar distance using only port inputs/outputs. Can anyone help in this area? I don't see any ports or commands defined for this function.

HERO 1 / HERO JR NEWS

Repeat from last month:

John Sprague (not a member) has a HERO Jr. robot for sale. It has:

- 24K memory
- I/R motion detector, voice, etc (standard features)
- BASIC cartridge!
- RS232 interface!
- Programming Language cartridge!
- Misc. cartridges (Songs, games, etc.)

He is asking $300.00 for it. I hope someone in the club buys it, so we can duplicate the BASIC cartridge, Prog. Lang. cartridge, and RS232 interface and make them available to other HERO Jr. owners. Or, if you are an enterprising sort of person, you could do this yourself and make some profit (if I had more time, I would do it).

Anyway, call John Sprague, 484-8270 evenings.

FROM THE LIBRARY

by Stan Spielbusch, Librarian

HERO 2000---

BATTLESHIP !! -- I have written a program in which the robot plays the game of Battleship against the human. It doesn't manipulate anything physically; it just keeps track of its moves (and yours) in memory. The human can either have a real battleship game (I bought the cheap "travel" version), or play on a piece of paper. The human enters his moves and responses (hit/miss) on the head keypad, and the robot speaks his moves and responses. I've added some "personality" phrases that depend on the progress of the game, for example if you're getting real lucky or if he's losing badly. If time and enthusiasm permits, I may add some more personality. It's great for entertainment. The only other improvement I can think of would be the addition of voice recognition, so the keypad wouldn't have to be used.

The program is in the library, named BATLSHIP.H2, with a documentation file (.H2D). I'm sorry to say that the code itself is not well documented...most of the program comes from an old magazine article.

XYZ-ARM bug fixed -- While working on the Checkers program, I found a bug in this program. It was using the ARCTANGENT function without checking which X-Y quadrant was being used. I fixed this bug, and the new version is now in the library. Also, the original program defaulted to a demo routine. Now this is commented out, and the program immediately asks for coordinates. It is still somewhat tedious to use -- I would like to see it work more like the teach pendant (allow "tweaking" a single axis value, rather than having to enter all values each time).

HERO 1---

Richie Dean, of Vero Beach, Florida, has submitted three great programs! Thanks for your effort, Richie, and keep up the good work and great imagination!

MORSE.H1 -- this is a morse-code translator. You type in the morse code (dots and dashes), and it translates it to letters and numbers. Or, you can enter the letters and numbers, and it will translate it into morse code. If this was coupled with Walter Bryant's CONTCODE program (which listens to whistled morse code), it would make an interesting data input option. Richie has also provided a documentation file, MORSE.H1D.

DAYOFWK.H1 -- this converts a calendar date (mm/dd/yyyy) to the day-of-week. Like I was saying before, this is the type of module/program popular with early personal computers (before "PC's") -- it's just a matter of time before the robots evolve into useful tools!

INFOTALK.H1 -- This is my favorite. Richie converted the DPRG Newsletter club information into a speech, complete with "Would you like to join?". This would be a perfect addition to any demo we give. Why should we give a speech, when our robots are perfectly capable of doing it themselves? (Well, maybe not "perfectly"...)

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If you have a program to submit, the easiest way is to upload it to the BBS. Another way is to 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 3 disks in the library -- a HERO-1 BASIC disk, a HERO-2000 BASIC disk, and a HERO-1 Assembler disk.
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. (Or, you can download the programs you want, or the entire library, from the BBS.) 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 Stan (address above).