

THE ROBOT COMPANION



The Newsletter of the Dallas Personal Robotics Group

April, 1989

Stan Spielbusch, Editor

UPCOMING EVENTS

The April meeting will be on April 8th, 2:00 PM, at the Dallas Infomart. The main activity at the meeting will be preparing for the Girl Scouts demo we're giving. Although we have a fairly 'standard' demo we give, we would like to have something original. Maybe not for this demo, but I think we should work on some original demo programs for future use. This should be one of the group's main activities. It's a lot easier to write impressive demo programs than to write 'useful' programs. I have yet to see a truly useful robot program in operation, although I've heard a lot of plans and ideas, and some programs in progress. I have, however, seen many demo programs in use, and effective for catching people's interest. Well, I'm getting off the subject now. I'll save my ideas for a future article. Anyway, start thinking about what would be appropriate for the demo. Remember, their parents will be there, so a little technical talk won't hurt, but keep it simple.

The girl scout demo is scheduled for 1:00PM, April 9th. Contact Ed Rivers at (214) 840-3044 for more details.

MARCH MEETING MINUTES

I am guilty of missing the March meeting, so I don't have the minutes (and our secretary hasn't contacted me). However, I did prepare a treasury/membership report, so here it is:

Our current balance is \$1276.42.

We are spending about \$45.00 per month on newsletter printing and mailing, plus a few dollars for miscellaneous mailing costs (information requests, etc.). The \$45.00 includes printing extra newsletters for samples, and we could support another 25 members without additional printing costs (due to quantity discounts).

We currently have 45 paid-up members, which is down slightly from last year. If we had 50 members, the membership dues would amount to about \$40 per month income, plus we make about \$5 per month interest, which would keep us barely in the black, income-wise. (Most of the treasury money came from donations to the club by doing demos.) At present, the balance is being eaten away slowly, but slightly increased membership would put us in the black. Due to the treasury size, I'm not concerned, so we'll continue with the current dues amount.

NOTICE! The deadline for newsletter articles is the 1st of each month! Contact me earlier if you need to make special arrangements to get an article to me, such as via modem or FAX.

NOTES FROM THE EDITOR

by Stan Spielbusch

The club still needs updated information from all of its members. I'm keeping a database of the information from the membership and renewal forms, which can be very helpful at times. For example, we can determine how many members are interested in homebrew robotics if they mention it on the "ROBOTS" line, or even put "homebrew in progress".

If you haven't turned in a renewal or new member form in the last few months, please send one to me. Use the form at the end of this newsletter. Fill in all of the spaces in the form. If a question doesn't apply, just put "none" or "N/A". If you don't want your information available to other members, just mark "no" at the bottom question. However, it helps us all communicate and help each other if you allow your information to be released. We don't sell our mailing list to businesses, so don't worry about junk mail or phone calls.

I actually got a response to the request for newsletter articles! Yes, I got 1 article. Come on, guys, I know you have something to say! You may not realize it, but all of you have some interesting ideas. Just write a short article, or even a note, perhaps with a few homebrew ideas, or software tips and suggestions. I know summer is coming up, but take a pad and pencil to the park with you and write me a note. OK, that's ridiculous. How about during lunch. Maybe while watching TV? Hasn't Star Trek inspired some ideas? Mission Impossible? Transformers?

Remember: The deadline for the newsletter is the first of each month.

Special thanks to Victor Sturm for his article on his homebrew project (see page 3). This is exactly what this club needs more of -- homebrew type projects geared toward learning and experimenting with robotics. While my own homebrew project is gathering dust next to my HERO 2000, I do have an 'excuse' -- my interests are mainly with software experiments and development, so a ready-made robot kit is more to my benefit. While I can write and run programs on my HERO now, Victor may have to wait a long time before his robot executes its first line of code, just like my own homebrew. Nevertheless, I respect anyone willing to do the 'hard' part of homebrewing!

PRESIDENT'S CORNER

By Ed Rivers

First of all, I'd like to thank the members that helped out at the KERA (PBS Channel 13) pledge drive: Walter & Bev Bryant, Connie & Pete Testa, Bart deBoisblanc, Brian Vaceluke, and David Ratcliff. I taped the entire time we were there on my VCR, and will show clips from it at the next meeting if anyone is interested.

Don't forget that our demo for Girl Scout troop 1380 in Garland is on April 9th. We'll be reviewing our demo plans at our main meeting on the 8th. Current plans are to demo a Hero 1, a Hero 2000, and our little Movit robot. We'll then have a question and answer session that everyone can help out with.

April 1st was our last scheduled user's lab meeting. The meeting was held at Highland Park High School with only three in attendance. At our main meeting, we'll discuss the future of these user lab meetings. Our next scheduled lab date is April 22nd. Should we move user labs to Sunday, or is Saturday still okay? Should we cease to hold user labs? Hope to see you at the meeting on the 8th.

Editor's note: Come on, Ed, there's a lot of blank space left on this page.

MY HOMEBREW PROJECT

by Victor Sturm 12222 Quail Dr. Apt 2404 Balch Springs, TX 75180

To give a short background on myself, I have been interested in robots and robotics since an early age. My first robotic interests were spawned by that robot in *Lost in Space*, and then I saw *Robbie the Robot*. My first attempt at homebrewing was with cardboard boxes and lights and batteries. My second was with wood and sheet metal. (I was still very young at the time.) I had taken apart almost all of my electronic toys when I was young and subsequently tried to put them back together again in an effort to learn how they worked.

It wasn't until I was in high school that I learned what electronics was all about. After that I just marked time until industry caught up with my imagination, and my dreams of building a robot from scratch that could "see" its environment as well as communicate verbally with people in that environment could be realized. Although some of the equipment and parts are not the latest and the greatest, it will help in construction costs in the long run if some of the parts were "free" and of use to the overall system.

The framework is nearing completion and with that I will submit a copy of my frame design with dimension details. The frame is made from 1/8 x 1 x 1 right angle aluminum, which is light yet strong enough for me to stand on. (I should know, I stood on the lower frame assembly to test it.) Although it (and I call my robot "it" because I haven't decided on a name yet) is no where near being complete, I can safely say that it will be a little more educational than building the HERO 2000.

Now before the HERO 2000 owners start calling me names and beating their chests I would like to take this opportunity and state for the record that the HERO 2000 is by far the best robot (learning aid) on the market to date, but (and here's the catch) it would be very hard to install another arm and the physical size of the HERO 2000 makes it hard to do large combination experiments involving a lot of hardware. But don't get me wrong, I support the purchase of HERO 2000's even though Heathkit, the manufacturer, does not support HERO owners and has taken the HERO out of the catalog this year. I do think the HERO 2000 is a good, semi-user-friendly robot with a lot of potential. It's just not what I want at the moment, and that's why I decided on homebrewing my own robot. But I'll still be willing to use certain parts and features in the HERO 2000 as long as the parts last, ie. drive train assembly and other non-CPU based parts.

As you may have suspected, I'm not a big IBM fan even if they control the market with parts and software, and even if the only good robot on the market (HERO 2000) is based on IBM also. Well, that's my personal opinion of the situation, so don't slap Stan on the hand if he prints any of this article.

Back to the subject, Homebrewing is or can be just as expensive as going out and buying a ready-made kit form robot, of which I don't think there are any left on the market with any real meat to them. So if you want to build your own or modify your HERO series, more amperes to you.

If that's what you want but don't know your diode from a transistor, don't be discouraged. I'm sure most of you are software specialists, so if you can learn to program you can learn at least the minimum in electronics hardware. Go by your nearest Radio Shack and pick up a book on Basic Electricity, read it first to get an understanding of it, and then read Basic Electronics. It will take time to learn, so don't get discouraged if you can't understand it the first time you read it. That's the whole point of the club, to help you, so ask questions!! Then read it again to make sure you understand it all, and before you know it you'll be brewing or modifying your own robot too.

I'll try to keep you updated on my progress with my own homebrew, and maybe throw in an article or two about the History and Future of personal robots.

Back to my robot, it might be based on the Motorola 68000 CPU, but as of yet I haven't made up my mind. It would be a good choice and a well-defined difference in software capability as compared to the 8086 style programs. Please note I did not say 'better than', because I don't know and I don't think anyone else does either, unless they work with both systems. I would like to hear your opinion on the advantages, if any, of the 68000, and I would also like to hear about the disadvantages.

Let's talk about the base construction. As I'm sure you can tell, there are some basic differences between my robot and the HERO 2000.

(1) The upper and lower torso are built together so if it needs to turn to pick up something the whole body turns, which may not be the best thing, but it's a start anyway.

(2) Two arms (one on each side) with separate slave CPUs to control them while monitored simultaneously by the master CPU.

(3) The hands will have two fingers with an opposing thumb capable of gripping anything, with multiple

pressure sensors. I hope to have a tentative design available soon.

- (4) Physical size.
- (5) Both sight and sensors to guide it.
- (6) Double the battery storage capability.
- (7) Space for multiple drives (Hard, floppy, or C.D.) for data storage, which will help when it starts to learn what objects are in its environment.

I know what you are saying to yourself -- "It will take years to get that robot to that point". Well you're probably right, but to someone who has waited this long, a few more years will just open more doors of opportunity in the electronics industry to meet my goals with this robot.

Well let me say in closing for now that I hope this article has at least stirred your imagination, if not inspired you to rethink the process of homebrewing.

ARTICLES OF INTEREST

By Stan Spielbusch

2001 Computers, Discover magazine, November 1988. This a consumer-oriented view of the future of robotics and computers, including robotics in the home. It's pretty optimistic, so it's good reading to lift your spirits if you're discouraged by the current state of robotics.

Microbots, Discover magazine, March 1989. I have seen other articles about this subject in trade magazines, but this is the most extensive article I've seen. It covers the new technology of making microscopic working motors out of silicon, the same way IC's are made. The implication is that complete robots could be made that are no larger than an IC chip, including brains and brawn. It goes on to theorize about cell-size machines, which could have wide-ranging effects in the field of medicine (personal programmable Commandos to seek and destroy viruses, cancer, tumors, etc.)

The LIMBO project, part 1. Micro Cornucopia, May-June 1989. This is the first in a series of articles in a robot construction project. The object is to build a robotic mouse for maze-running, but this 'mouse' is about the size of a HERO 2000. It proves to be an interesting series. The author is (or was) the president of the Seattle Robotics Society, which I intend to contact shortly. Apparently, they don't know we exist, so I think it's time to spread the news! If you wish to contact the author: Bob Nansel, 816 North 105th St., Seattle, WA 98133.

By the way, Micro Cornucopia is an excellent magazine, reminiscent of BYTE and Kilobaud in the good old days! It's full of practical software (and hardware) routines and projects, and very little advertising. Most of the software is 'C' oriented, but it covers all processors (8086, 68000, etc.) and some other languages. Contact Micro Cornucopia at P.O. Box 223, Bend, Oregon 97709-9982. You might also find a copy in hard-core (hacker) computer stores and surplus electronics stores (like Tanner electronics here in Dallas).

Electronic Engineering Times, Feb. 6, 1989 had an interesting article about a robot that Fujitsu has built for trade shows. Actually they have several robots, playing cops and robbers around the show building. The interesting thing is that the robots are completely neural-network controlled. Even their 'programming' was done by trial-and-error learning. All sensors are inputs to the network, and the motors are outputs. The 3 cop robots search out and apprehend the criminal, while the criminal attempts to flee. I would like to give more details, but time does not permit. It's a very interesting article, so maybe I'll give a more extensive report in a later issue.

HERO 1 / HERO JR.

HERO 1 robot for sale \$600

Brand new, factory assembled, with every option (arm, radio remote, utility ROM, additional RAM, speech, all manuals plus 2 additional books (3rd-party). If you thought a HERO Jr for \$300 was a good deal, this is great! Contact Gary Brown at (817) 497-3938. He wants to sell immediately!

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.

To become a member and receive the newsletter, have access to 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 Stan Spielbusch, Treasurer (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 sample issue of the newsletter.

Tentative Meeting Schedule (1989)

April 8 May 20 June 10

Meeting times and location: 2:00 P.M. at the Dallas Infomart.

Club officers:

President: Ed Rivers
Treasurer: Stan Spielbusch

Vice-president: Brian Vaceluke
Secretary: David Ratcliff

Back Issues

Back issues are now available in three sets. Each set is \$5.00, plus \$2.00 postage and handling if ordering by mail. Set 1: From the formation of the club in 1984 through 1986. Set 2: 1987. Set 3: 1988. Issues from 1989 are \$0.50 each, plus \$0.25 p&h. Contact Stan Spielbusch, Editor, 2404 Via Barcelona, Carrollton, TX 75006.

MEMBERSHIP APPLICATION

Dallas Personal Robotics Group
c/o Stan Spielbusch 2404 Via Barcelona Carrollton, TX 75006

Check one: () Renewal () New Member () Info Change () Sample issue request

NAME (please print) _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

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

TYPE OF ROBOT (if any) _____

TYPE OF COMPUTER (if any) _____ MODEM: _____ BAUD

Do you want the above information available to other members? _____

(We do not sell our mailing list to businesses, but it is available free to all club members.)