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THE ROBOT COMPANION

the newsletter of the
Dallas Personal Robotics Group
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March, 1988
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NOTE FROM THE EDITOR

Thank you, SIG leaders and officers, for coming through with articles this month! I almost had to do some real "editing" to fit everything in!   Let's keep up the good work!

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FEBRUARY MEETING MINUTES
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2:00 P.M.   2/20/88

Old Business:

   Bev Bryant, the new president and old treasurer, presented the new club treasury balance that was carried over from last year. The balance was carried.

   Bev also displayed the plaque that was purchased from club funds in honor of Bud.

New Business:

   Bev proposed a birthday party for the club's fourth year. It would be attended by the robot members of the club. A birthday cake would be bought from club funds.   The motion was carried. The date is set for April 23 1988.

   Walter Bryant, the new club treasurer, presented the program that was shown to the Mid-cities' IBM PC user's group, on his robot Seldon.

   A video tape with excerpts from "Discover, the World of Science", a PBS documentary, was played . One excerpt presented the "Terrigator", a vision oriented navigating cart. The next excerpt presented the Terrigator's big brother, the "Nav Van", a van that navigates streets at walking speed. Another excerpt presented a hexapod walking robot, while the last segment presented hopping and trotting robots with 1 and 4 legs, respectively.

   Greg Oliver demonstrated some of the routines on Walter Glod's 1K chip for Hero 1.

   Ed Rivers gave an update on his assembler for the Hero 1.

   There was a discussion on future assembly room arrangements a future Infomart meetings.

   The meeting adjourned to break into its three SIGs.

MARCH MEETING AGENDA

Old Business

    Brief Review of By-Laws
    Birthday Party
    State of the Library (Stan)

New Business

    Computer Council of Dallas Alternate
    Two people to clean up after April meeting (3-4 P.M.)
    User's Labs

Demos

    HERO I Compass Program

PRESIDENT'S CORNER

by Bev Bryant

Hello, again. Well, people, it seems that the stars have guided our course. We are apparently established at Infomart. What good fortune! Management at the Heathkit store has changed and offices are being expanded which leaves no space for our meetings. However, our plan to have user's labs at the Heathkit store has fallen through. As I see it, we have several options:

1) Return to having user's labs at member's homes.
2) Break up the user's labs into SIG meetings at member's homes.
3) Call user's labs periodically when something really exciting comes up (demo, special projects, etc.)
4) Do away with them.

Personally, Option 4 is my least favorite. I feel more free flow of information occurs at the user's labs. I personally have more fun at the labs. If we do continue to have labs, however, I feel that they need to be more structured and better planned. We need to announce them in the newsletter, which will give members 3 weeks to plan to attend. If they are not announced in the newsletter, we need to send out postcards, letting members know when and where it will be held and what we plan to accomplish. If you can think of any other options, we will discuss them at the meeting. See you there!

OF SPECIAL MENTION

The Fort Worth Museum of Science & History will have an exhibit called "Robots & Beyond", running Feb. 12 through May 1st. Walter Glod, of the Hero Resource Exchange, has mentioned that his group will have a display of HERO 2000's there! He has also requested that we express our dissatisfaction to the curator if the HEROs are not operating when we visit. In his words, the HERO 2000 should not take a back seat to industrial robots!

HACKERS AND HOMEBREWERS

by Brian Vaceluke, Homebrew SIG Leader

On February 20 the homebrew SIG met for the first time. A future group project was discussed. As no surprise it was decided that we would construct a scratch built robot. A walking robot was proposed by David Allen. Also I proposed a standardized bus. This bus does not have to be an internal bus, but it could be a control or I/O bus only, much like the GPIB bus used on test equipment. We could call it the "DPRG" bus. For better noise immunity this bus could use fiber optics or twisted line drivers and receivers. Such a bus would be computer independent.

The on board computer could be an IBM compatible mother board. Or it could be a Hero 2000 motherboard and backplane. This would give us compatibility with software and hardware developed for the Hero 2000. Or it could be the "Datablocks" as proposed by Stan Spielbusch. At the last user's lab David Ratcliff proposed that he could donate a TI home computer with FORTH to the "we need a computer cause."

We are always looking for suggestions, parts, and interest. Anyone who could help would be welcomed to join the homebrew SIG.

HERO 1 / HERO JR NEWS

by Greg Oliver, HERO 1 SIG Leader

We had our first meeting in the Dallas Infomart last month. It's really impressive! Sorry for all of you that missed it. The turnout was average. I presented (or at least, tried to present) a demonstration of the ROM that we received from Walter Glod of the Hero Resource Exchange. I explained about the coding error (bug) I had discovered while disassembling the chip. We talked about the probability of rewriting the code, and since it takes up a socket, adding more code to flesh out the routines. Here's where you come in...

Do you have any short (or medium) length machine routines that you find useful? Would you like to submit them to Stan, the librarian, and have them included in a new ROM chip that the club will make available to other Hero I users? Want to see your name in print?

If you answered "yes" to any of the above questions, then send that code to Stan ASAP (preferably before midnight tonight, operators are standing by) and I will start adding it to the list. When we have about 4K, we will try burning it into an EPROM.

I also would like to publicly thank Ed Rivers for his compiled version of the Cross-Assembler. It is remarkably fast and easy to use. The documentation helps, as my notes on the original version are lost in the black-hole on top of my desk! Those of you with an MS-DOS CPU that are tired of hand-coding, should contact Ed. I'm sure that, for a nominal copying fee, he will supply you with a copy.

Note from Stan: see "From the Library" below.

That's about all the news for this month. See you at Infomart!

by Walter Bryant, HERO 2000 SIG Leader

"WELL, WHAT DOES THE ROBOT DO?"

How many times have you asked this question? Does it embarrass you? How do you answer? Do you know the answer?

They are curious, they want the answer. We _really_ want the answer. We _need_ the answer!

We need an answer that is more than, more or less, kind-of-sorta...vague. Detail is what we need. A written, or better yet, a typed answer, is what we need. If it also had a few charts and some realistic completion dates on it, it would be great! But it must be the real answer. It must be.

I propose that we, the members of the Dallas Personal Robotics Group, write the answer down, type it, and finally, add the charts and realistic completion dates. No, it is not impossible!

"Well, what does the robot do?" We reply, "The robot does whatever it is programmed to do." then we pull out the typed sheet with the charts and realistic completion dates of programs, and show it to them.

"Here are listings of some of the major programs and demos we have done in the past", we say. "And here are some of the neat programs the group is working on now", we say as we point to program names, SIG groups, and club members who are writing them.

"And here," we exclaim with pride, "are descriptions of some really incredible programs we are going to write in the near future! Here is a flow chart showing how all the programs are connected, the order in which we will write the new ones, and what we think are realistic completion dates. Would you like to help?"

HERO 2000 "HOME PROGRAMS"

. CONTINUOUS CONSCIOUSNESS
   A) Utilize the continuous consciousness program
   B) Tailor it to your personal routine and family life
   C) Expand, simplify and improve it

. HOME NAVIGATION
   A) Tailor the home navigation program to your house
   B) Integrate with the above program
   C) Expand, simplify and improve it

. AUTO-DOCK WITH POWER SUPPLY
   A) Develop an auto-docking program
   B) Integrate with the above programs

. INTERFACE WITH THE HOUSEHOLD MEMBERS
   A) Develop special subroutines to augment the overall program and to interface with each family member, even the family dog.
   B) Integrate with the above programs

. KITCHEN WORKSTATION
    A) Develop a kitchen workstation program and workstation.
    B) Integrate with the above programs

. SECURITY PATROL AND REPORTS
    A) Develop a security patrol program for your house using above programs.
    B) Integrate with the above programs
    C) Inform your neighbors and friends

. YOU NAME IT!

!!!! MEMORY EXPANSION !!!!
by Stan Spielbusch

    Brian Vaceluke and I are planning to work on a better alternative to Heath's memory
expansion boards. Heath's boards use 8K RAM chips, 24 per board, for a total of 192K per
board. To get the 576K "maximum", it takes 3 full boards, a total of about $600.00!
    We believe that we can make minor modifications to the board to allow 32K RAM chips
to be used. This would permit 576K OR MORE on one board. (We will see if it's possible
to make use of more than 567K.) This would also save a little weight on the robot.   The
chips are available for about $11.00 each, and it would take 16 chips (in addition to the
64K that comes on the board originally), for a total of about $275.00 ($100 for the board,
$176 for the extra chips). Still not cheap, but that's the price you pay for the
convenience of static RAM.
    Also note that if several people are interested in doing this, we may be able to get
a good quantity discount on the chips! In any case, the details of modifying the memory
board will be in the newsletter as soon as we have a working prototype.

FROM THE LIBRARY

by Stan Spielbusch, Librarian

HERO 1----
    Ed Rivers has created a new, improved version of his famous 6800 Assembler (HERO 1
and Jr.). It is now on the Assembler disk, along with updated copies of MOVE, HERO, RACE,
and SIMU. Also, the .LST files (assembler output files, with hex codes for entry into the
robot directly) are included. A new program, SHOW, demonstrates programming the motor
movements in assembler. Last, but certainly not least, a documentation file (8 pages!) is
on the disk. Great work, Ed!

    Greg Oliver has submitted the files from the tapes that Walter Glod sent.   In
addition to the WORDS EPROM source code (now on the Assembler disk), there is:
    VOIREC - a voice recognition experiment
    NAVIGAT - a navigation program
    NAV - another navigation program (somebody tell me what they do!)
    SONAR - a sonar demo program
    ALARM - an alarm clock program

    Note: All these short demo programs are great for the beginning experimenter or for
building blocks, but how about some really impressive programs that DO SOMETHING!   Get
your brains working, SIG groups, and get some projects going! The continued consciousness
and home navigation projects were good ideas -- let's keep them going!

HERO 2000---
    I have fixed a bug in WANDER.H2 (on the BASIC library disk). This bug was found by
Walter Glod, and caused the program to crash when HERO got stuck more than 17 times in a
row.

IDEAS --
    This idea comes from Walter Glod's newsletter...find a simple game at the toy store
that the HERO can play against a human (or another robot!).   Think about adding any
special sensors (e.g. a sonar or light sensor on the gripper) to make it easy for HERO to
play without ANY human intervention. For example, with a simple light sensor, HERO could
play checkers -- he could distinguish between a red and black piece (or use white/black
for better contrast) without much trouble at all.
    Besides being a nice companion, think of the impact at a show, having 2 robots play
each other!   In this case, they wouldn't need any additional sensors -- they could
communicate their moves to each other using Bev's communication program!
    Note: Kings (double-pieces) would be easier to handle by putting velcro on the pieces
(use 2 different colors of velcro, of course)!

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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).

INDUSTRY NEWS

by Stan Spielbusch

    Just a short note -- Fujitsu is developing a robot with a neural net as a brain.   It
will have 36 sensors for "eyes and ears". Instead of conventional programming, they will
use Pavlovian training: "We hit the robot on the head until it gives a correct answer.
When it has learned and answers correctly, we pat it on the head". The robot will be
introduced at Fujitsu's technology exhibition in May.
    Unfortunately, I don't know what the robot is supposed to do! The article was not
very specific about its function, just that it was to have an advanced neural net
algorithm for exceptional learning speed.