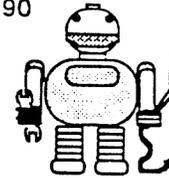


ROBOT BUILDER

April 1990



The official publication of the Robotics Society of Southern California
P.O. Box 3227, Seal Beach CA 90740, Meetings the 1st Tuesday @ 7:00 PM at MTI College

UPCOMING EVENT CALENDAR:

March 25:	Computer Swap Meet at Advanced Computer Products
March 31:	RSSC Robot Project Workshop, <i>The Robot Company</i>
April 3:	RSSC April Meeting, MTI College; Topic - Jerry Burton will demonstrate his new SynPet Newton
April 28?:	RSSC Robot Project Workshop, <i>The Robot Company</i>
May 1:	RSSC May Meeting, MTI College; Topic - Batteries
May 20:	Computer Swap Meet at Advanced Computer Products
June 5:	RSSC June Meeting, MTI College; Topic - Motors

MARCH 6th RSSC MEETING

The March 6th Robotics Society of Southern California (RSSC) meeting was attended by about 25 members and guests. Tom Carroll presented a videotape of the SynPet robot demonstration (see article).

A major portion of the evening was devoted to Peter Movsesian, President of the Robotic Assistance Company in Santa Ana. Peter presented a short videotape on his robot "MAX," which his company built and is currently developing for use by the handicapped.

Joe McCord made announcements that he would be the Orange County distributor for the SynPet Newton. Additionally, his company will be providing a robot for an upcoming TV show.

Scott MacGillivray presented a preliminary drawing of the base for the RSSC robot.

SYNPET SP2 DEMONSTRATION

On Friday, February 23rd, the RSSC was host to a demonstration of the SynPet SP2 (Newton) personal/home robot at MTI (see photo). Steven Hodges, President, and Elizabeth Hooley, Marketing Manager, of SynPet provided information and a demonstration of their company's new robot. They have been traveling the country to introduce the robot, give demonstrations,

and look for distributors. They were on the east coast several weeks ago and were making several stops in southern California during the week of February 19-23.

The robot is 18 inches wide and 34 inches high, and has a very "friendly" looking appearance (see photo). Steve controlled the robot by use of voice commands that were input through a small microphone pinned to his shirt and wired to an RF transmitter. The most impressive aspect of this robot is the total use of voice to provide inputs to control the robot's movements and speech responses. All the commands were readily understood and performed (except it was a little stubborn about wanting "to play a game"). The speech synthesis was equally impressive with its variety of sound effects, songs, and one-liners, although there were times when it was hard to understand what it was saying (the speaker is temporarily housed inside the body and will be mounted to the body shell in the future).

Getting down to basics, Newton has three computers with the main processor system consisting of an IBM XT equivalent with 768 kb of RAM. Options to upgrade the main computer to an AT or 386 system are also available. Most software is written in its own language, which uses much of the C++ language. Control software is written in 8088 Assembler. There is a 20-Mb rugged hard disk drive, with options to upgrade to

40-, 60-, or 80-Mb capacities. For program transfer, there is a 720-kb, 3-1/2-inch floppy disk drive (see photo).

Newton has four ultrasonic range finders: three are mounted on the front of the body, and the fourth is mounted on its rotating head. There are two gearmotors (with encoders) at the base that drive the wheels (see photo). A third gearmotor is used to rotate the head through 350 degrees. At the base, between the motors, there is the 12V, 35 amp-hr rechargeable, sealed, lead-acid battery.

Newton has too many features and capabilities to be fully described in our newsletter, but interested members are strongly encouraged to contact Liz Hooley at SynPet for more information. The address is:

SynPet
Personal Electronics Technologies
7225 Franklin Road
Boise, Idaho 83709
(208) 376-0303

SynPet has developed a very impressive system based on a variety of more common "standards," (e.g., the IBM PC bus, Polaroid ultrasonic sensors). From a hobbyist point of view, it would be ideal if SynPet offered a "stripped down" version for the robot enthusiast to tinker with. This could be as rudimentary as just the high performance controller (HPC) and power conditioning boards, or all the way up to a version without the shell and some of the more commonly available components such as the motherboard and floppy disk drive.

TV reporter Kimberly Maroe and a camera man from Channel 11 (Fox) were there and filmed Newton demonstrating its speech and movements. A short (about 45-second) clip was shown later that evening on their 10:00 p.m. news broadcast.

I would like thank Steve and Liz, on behalf of the RSSC, for their effort in providing us with a close-up look at Newton and private demonstration, and in addition to wish SynPet success in the future of personal/home robotics and with Newton!

MARCH 3rd RSSC ROBOT PROJECT WORKSHOP

On March 3rd, the RSSC had our first robot project workshop at *The Robot Company* shop in Costa Mesa. The three subcommittees (mechanical, electronics, & software) were all represented with a total of 13 members present. It was agreed to begin discussion on design of the base so that construction of it could start first. Most of the 2-1/2-hour meeting was on various attributes the robot base should have. The following parameters/requirements were established as initial design goals:

- 1) The base will be approximately 20 x 20 inches (18-22 inches) based on an octagonal shape. There will be two drive wheels aligned on the center line with the majority of the weight located behind the wheels. A third caster wheel located in the rear will provide balance support. A fourth wheel may be needed at the front to ensure that it will not tip over.
- 2) The final weight was left somewhat open, but it was desired to be light enough that one person could lift it (approx. 50 lbs). For motor drive capability, a weight of 100 pounds was to be used to ensure growth potential on top of the base.
- 3) The wheel size will be as large as reasonably possible. The target size will be 8 to 10 inches in diameter. Lightweight rubber tires are preferred.
- 4) The motor drive power will be adequate to allow movement over low-pile or industrial-grade carpet. In addition, the base design and motor drive will be required to drive over a 3/4-inch-high obstruction (such a door threshold).
- 5) The computer system will be based on the AT Bus (ISA). Don Golding has made a VERY generous gift in offering an AT motherboard free for use in the RSSC Robot. In addition, to allow design flexibility, a card rack for STD Bus cards will be provided. It is felt that some lower-level control functions would be best handled by the STD Bus system to free up the AT Bus for higher-level control.

6) The overall height was not rigidly fixed, but it is desired to be high enough to mount components on its top that can work at countertop level, while still not being so high as to be top heavy.

If any RSSC members have some components that they would be willing to donate to the RSSC Robot, items that will be needed include 12V gearhead motors, aluminum sheet/plate and 1-inch angle, rechargeable battery, 3-1/2-inch disk drive, sensors (IR, ultrasonic, and light), bump switches, and many more. As the design matures, we will know more specifically what is needed, so stayed tuned...

Our next workshop will be held on March 31st, at 10:00 a.m., again at *The Robot Company*, 881 West 18th Street, Costa Mesa. At that time, a preliminary design should be done and available for review. We should be able to start cutting metal in April!

UPCOMING RSSC EVENTS

The 1990 Orange County Fair will be held from July 11th through 22nd. As you might remember, last year at the OC Fair, the RSSC booth had a fantastic response from the crowds and we were able to get the word out about RSSC. We are planning to have a booth there again and will need some help in organizing the display and activities.

In addition, the RSSC is planning to have a booth at the May 20th ACP swap meet. It is believed that this will be a very good source to attract new members to RSSC. The booth has been provided free by Tom Freeman of ACP. We plan to have some of our members' robots and, hopefully by then, we will have the RSSC robot at a stage that it will look like something resembling a robot. We will print up some flyers about RSSC with a membership form.

At our April meeting, Jerry Burton will demonstrate his newly obtained SynPet Newton. Jerry is planning to develop some software for Newton to enable it to perform some auto-navigating.

For our May and June meetings, we are making arrangements to have representatives

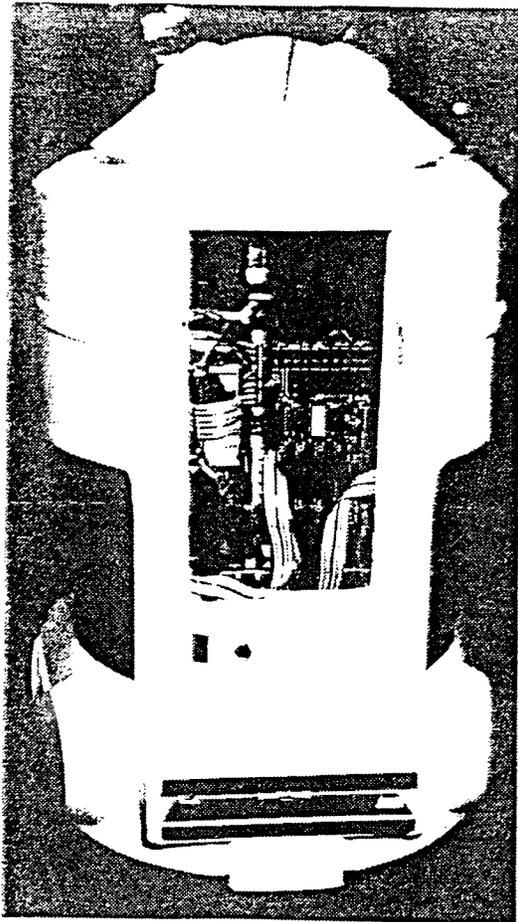
from some manufacturers come and present a short technical overview on batteries (May) and motors (June). I'm sure you're not going to want to miss these meetings!

APRIL MEETING AGENDA

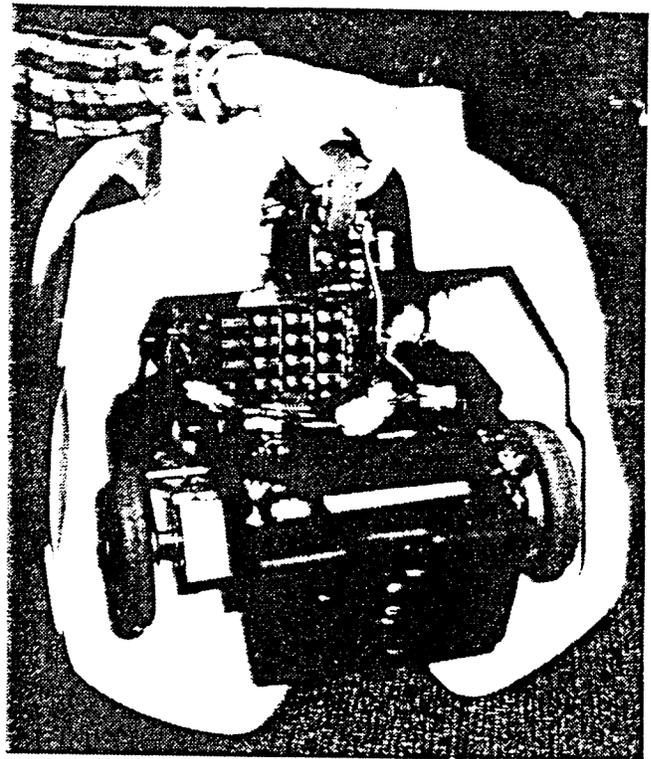
- 1) Business agenda
 - a) A preliminary copy of the RSSC Bylaws will be distributed to the membership for review and comments.
 - b) Selection of an OC Fair Activity Chairman
- 2) Presentation of workshop results and of the RSSC Robot design
- 3) Jerry Burton will present and demonstrate his new SynPet Newton robot.
- 4) Resource Directory distribution? - honest, I'll try to have some copies!
- 5) RAM (Random Access Meeting) - bring something of interest to share with the membership!

Again, I hope to see the entire membership there, along with any interested individuals or business representatives! Pass the word around about the RSSC!!

Scott MacGillivray, Editor



A view of Newton with the rear cover removed. The disk drives are located in the lower left of the opening.



The bottom with the battery swung down to show the internal arrangement.