DPRG
DALLAS PERSONAL ROBOTICS GROUP

April 1994 | A Newsletter for Personable Robot Enthusiasts | Vol. 2 No. 4

DPRG Members Enjoy ROBOFEST 5

After a 4-hour drive from Dallas to Austin through the heart of Wild-Wild Texas, we arrived at Austin on the morning of Sunday, March 27th in time for the 2nd and final day of the 5th Annual RoboFest. After a quick peek at a city map in a local grocery store and several "WRONG WAY" and "ONE WAY" street signs later, we were at the gates of the City Coliseum, the venue for this Grand Festival of Robots.

Once inside, I watched in awe at what looked like a space city of sorts. Two mobile platforms with onboard cameras were on the prowl near the entrance to the dome. Nearby monitors displayed information gathered by the restless mobile patrol. A human in a MIDI body suit with sensors that use body motion to control synthesizers was making body music. A couple of Blimps or "cybernetic airships" with onboard cameras were patrolling the airways while trying to avoid the "blimp people" (an inflatable chorus-line of mylar bodysuits with radio controlled cars for feet!) The mechanical pit-bull, a fierce pneumatic monster, was not to be messed with!

In another part of the dome, the Austin Chapter of the EEF (Electronic Frontier Foundation) was giving free tours on the Internet, and other enthusiasts were experimenting with "Telepresence" by controlling a Robot at someone's house in Canada with nothing but the feedback from the Robot's eyes as seen down on the monitors in Austin.

We met with members of several Robot Groups and discussed plans about standardized 'bot parts and the list of fantastic automatons goes on and on. I think the event was a grand success and as we left the coliseum, I was rejuvenated in my determination to complete my own Robot. On the way back, we discussed the possibility of such a Robot Festival in the Dallas area sometime soon. **-- Dilip Garapaty**

Information Superhighway <gag!>

At the risk of succumbing to the trend towards overworked "buzzwords", I thought some of you non-netters might like to know what's been going on in the "ether". Dilip Garapaty, an active member of our group has been talking about the DPRG throughout the world via the Internet and Usenet. He's been getting quite a bit of response from folks from all around the globe, as you can see from his report:

As most of us know, the Internet is a fantastic source of info and there are several newsgroups out there that deal in Robots and AI and other related stuff. The Internet is very accessible through various "Internet Providers" and is relatively inexpensive for a basic connection. My favorite newsgroup is "comp.robotics" available on most UNIX systems via the "rn" command. It is also an ideal forum to put forth your ideas and queries. DPRG members in Dallas can easily access the newsgroup through the Interociter BBS (214-258-1832), but for those of you who do not wish to make long distance, long duration calls, the Internet is a cheaper alternative. I had an overwhelming response to one of my postings on the net about the DPRG and its newsletter. So, I think it is a good idea to have a copy of the newsletter posted on the net each month. For this, I volunteer and then literally millions (20 million at last count) of computer users will have access to our informative newsletter.

Dilip Garapaty - Botman

ROBOFEST 5 A SUCCESS !

Come see all the pictures and hear all the stories at our April meeting. Also we've got several Robot protocols and plans for a Robot Group network to discuss.

COME ONE, COME ALL! SEE YOU THERE!!!

Robot Building Basics

By Roger Arrick

After building robots for several years, I figure it's time to pass on some information to those just getting started. I'm sure you have you own list of "dos" and "don'ts", here's mine:

Setting a Goal

This is one of the most important parts of a home-brew robot project and is completely ignored by many builders. The main reason to have a goal for your Robot project is to provide an answer to friends and family who ask that common question, "Well, what will it do?" Having a goal can also provide the drive necessary to complete a project during times of disinterest. Robots built without a goal in mind often have (strangely enough) no function. Some common goals are: Automatic house vacuuming Robot, Autonomous sun-searching and recharging Robot, Robot security system, AI software development platform, Increasing interest in science among kids, Maze running Robot, and, of course, the most popular -- brain consuming money exhausting toy.

Design Simplicity

Have you ever been approached by someone who challenges your Robot design and asks, "Why didn't you make it more sophisticated?" Always respond to this question with, "Where is your Robot?" It stops-em dead in their tracks every time! All seriousness aside, if you dream up a great idea, what good is it if it's too difficult to implement? Some of the best Robots I've seen were very simple. *[Ed.- Remember that little horizontal pogo stick machine that was dogging everybody at our last contest!]* All of the Robots I've seen were built! Design your Robots to match your talents, resources and desires... then build it.

Weight Limits

Since a Robot must supply its own power source and propulsion, reduce weight wherever possible. Use aluminum or plastic. Cut holes in plates and panels to make them lighter without sacrificing strength. It may even make sense to weigh the subsections of the Robot to keep track of where the weight is. As your design gets bigger and weighs more, everything gets more complicated, not just bigger and heavier. For instance, if your platform is huge, it well require larger motors, larger motors will require larger drive electronics and a larger battery which may require a **larger platform!** *[Ed. - See to last month's Research Results column on big batteries.]* Mechanical designs are not scaleable, in other words, if you design your Robot to carry 5 pounds of electronics and batteries, you can't always just increase the size of all the components uniformly to get a bigger unit. Take a look at dogs and elephants, they're designed differently. If you increased all of the parts of a dog uniformly, you'll get a very large dog that can't even breathe, much less walk or wag its tail.

Power Requirements

Every Robot has a power source whether it be electricity or air or even Mr. Fusion. Decide what voltages are going to be needed and then how much current. List each part and how much current will be drawn. From this list, you'll be able to select a battery or batteries that will provide the life-span you want. Remember, a battery that's too large may require a large platform which requires larger motors and... well you get the picture.

Cost Containment

I often ask Robot builders, "How much did this cost?" The most common answer, by far, is, "You don't want to know!" It's often followed closely by, "If my wife knew, she'd KILL me!!!" Since Robots are easily built and improved in small sections, they often nickel and dime a builder to death. Keep a list of the larger items (not every nut and bolt) and how much it costs. When you begin your next unit you can figure what percentage of funds are used for propulsion, batteries, control, sensors, etc. and make improvements. The list is also a great resource for others who are about to begin building theirs. I've seen some very elaborate Robots that could never be used as a model for others due to the expense. This disadvantage should be figured into your project.

ANNUAL SPRING SURVEY - 1994

Yep! Once again, it's time to take a good look at ourselves and see what we're made of... Over the past year, the DPRG membership has grown tremendously. We've gained new members faster than the Republican party! So, to help with our record keeping and to get a little more insight into what our Newsletter readership is into, please take a few minutes to fill out our Spring Survey and drop it in the mail. The startling results will be posted in an upcoming Newsletter for all to see. Without further ado...

NAME _____ DPRG MEMBER ? _____ SINCE ? _____

ADDR _____ IF YOU'RE A MEMBER OR A SUBSCRIBER TO

STATE _____ ZIP _____ COUNTRY _____ OUR NEWSLETTER, WHEN ARE YOUR

PHONE # _____ FAX # _____ ANNUAL DUES DUE ? _____

OCCUPATION _____ ARE YOU A CONVICTED FELON ? _____

AGE _____ SEX _____ MARITAL STATUS _____ EVER WRITE FOR THE NEWSLETTER ? _____

DO YOU OWN A COMPUTER ? _____ WHAT TYPE AND OS ? _____

ARE YOU A PROGRAMMER ? _____ WHAT LANGUAGES ? _____

DO YOU CALL OUR INTEROCITOR BBS ? _____ ON THE INTERNET ? _____ COMPUSERVE ? _____

IF YOU GET EMAIL, WHAT IS YOUR EMAIL ADDRESS ? _____ CS ID ? _____

ARE YOU BUILDING, OR HAVE YOU EVER BUILT A ROBOT ? _____ IF SO, PLEASE DESCRIBE ON BACK...

HOW LONG DID IT TAKE ? _____ HOW MUCH DID IT COST ? _____

WHY ON EARTH DID YOU EVER DECIDE TO DO THIS ? (CONTINUE ON BACK IF NECESSARY) _____

_____

WHAT GOT YOU INTERESTED IN ROBOTICS ? _____

_____

WHAT KIND OF ARTICLES WOULD YOU LIKE TO SEE IN THE NEWSLETTER ? _____

HOW DO YOU THINK THE NEWSLETTER COULD BE IMPROVED ? _____

_____ (CONTINUE ON BACK IF NECESSARY, BUT BE KIND !)

EVER CONSIDERED CONTRIBUTING AN ARTICLE TO THE NEWSLETTER ? _____ IF SO, THEN DO IT ! ! !

WOULD YOU BE INTERESTED IN HAVING THE NEWSLETTER FAXED TO YOU INSTEAD OF MAILED ? _____

WOULD YOU LIKE TO GET THE NEWSLETTER VIA EMAILED .EPS FILE INSTEAD OF BY SNAIL MAIL ? _____

WOULD YOU LIKE TO SEE ADS FOR ELECTRONICS / ROBOT PARTS / ETC... IN THE NEWSLETTER ? _____

DO YOU ATTEND THE MONTHLY DPRG MEETINGS ? _____ IF SO, HOW OFTEN ? _____

WHAT WOULD YOU LIKE TO SEE MORE OF AT THE MEETINGS ? _____

WOULD YOU LIKE TO BE A VOLUNTEER ON ONE OF OUR MANY COMMITTEES ? (DON'T BE SHY !) _____

PREFERENCES: __ NEWSLETTER __ GROUP BOT __ CONTEST __ FREEBIES

__ LIBRARY __ BBS / INTERNET __ FUND RAISING __ EDUCATION

SUGGESTIONS FOR GUEST SPEAKERS OR PRESENTATIONS ? _____

_____

DO YOU THINK ROBOTS WILL EVER BE SELF AWARE ? WHY OR WHY NOT ? WHEN ? _____

_____

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HOW DO YOU THINK THE FUTURE OF ROBOTICS WILL UNFOLD ? _____

_____

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_____

COMMENTS, SUGGESTIONS, IDEAS, CRITIQUES ? _____

_____

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_____

Thanks for participating in our 1st Annual Spring Survey! Your input will help us keep the DPRG growing and going in the right direction. If you've been holding back or have been a little shy about jumping right in and becoming an active, participating member of our outstanding group, please accept this invitation to dive right on in. We've got a lot of friendly, knowledgeable, 'Botmen about that are willing to help with ideas, inspiration, expertise and encouragement. We know that there's a 'Botbuilder inside you just trying to get out.

Please mail surveys back to:

Dallas Personal Robotics Group
c/o Eric Yundt - President
5112 Hardaway Circle
The Colony, Texas 75056

Fasteners

Unless you're going to glue everything together, (hey, not a bad idea!) you're going to use fasteners such as screws, nuts, nails and rivets. Most hardware stores can take care of you in this department. Try to standardize on screw threads and sizes even if it means drilling larger holes in some pieces. You never know, you may have to pull a bolt off of the battery bracket to patch a dangling drive motor in the middle of a maze running contest -- it would be nice if it fit! Use pip rivets on items that won't ever have to be pulled apart, rivet guns are cheap and rivets won't rattle loose like screws. Don't forget to put fasteners on your weight chart. You would be surprised at how much 100 screws, nuts, and washers weigh.

Development Platforms

Don't plunge into building your monster without considering how you're going to develop the software and test concepts such as navigation and ranging. If you select some wiz-bang processor, consider how much a cross-assembler, compiler, programmer, emulator and other items are going to cost. Every dollar you spend on development is one dollar you could have used to buy a sensor or battery. Choose items that are popular, since they are made in larger quantities which provides a better value.

Vibration

Never underestimate the power of vibration. You wouldn't believe the number of problems that can accompany a robot that shakes, rattles and rolls. Sometimes you can even follow the trail of bolts, transistors and battery acid behind a Robot. Many of the problems caused by vibration are almost impossible to find, such as intermittent connections. Try to minimize the effects of vibration by mounting motors using rubber grommets and try to dream up a simple suspension system that will prevent your entire system from shaking and twisting -- even blocks of foam rubber would be better than nothing. Always use lock nuts, star washers or loc-tite on fasteners to prevent loosening. Keep wires away from sharp corners by using sleeving, electrical tape or caterpillar grommets.

Perfection, A Robot-Builder's Worst Enemy

I saved the best for last. Most Robot builders are perfectionists. It's common for "techie" types, but often prevents accomplishment. My guess is that there are more people who know how to build a Robot, but won't, because they envision such a huge, elaborate, perfect Robot that they could never build it, than there are people who want to build one, but don't have the talent or resources. Even if a perfectionist builds a Robot, he (or she) is almost always tearing it down and starting over to make the next addition fit better. Such perfectionism often keeps the builder from actually enjoying the accomplishment because all he see is what it isn't. Begin with a simpler, more constructable Robot, then add to it. Try to postpone complete rebuilds until it really makes sense. Just look how much has been added to the IBM PC platform over the last 12 years. Do you think IBM envisioned multimedia PCs and Windows NT? No way! The first PC had a cassette port! Make subsystems modular to allow future upgrades easier. Perfectionism has many positive effects such as the desire to constantly improve and create new things. Try to find the right balance and maybe the time you spend will produce almost as many great things as you dream of.

Happy Robot building!

Roger Arrick, an active member of the Dallas Personal Robotics Group, can be reached on the DPRG BBS.

Note: We will be discussing many of these aspects in specific detail in future issues. Get your design specs in and put in your 2 cents worth as soon as possible. Next month we will look at the pros and cons of several different suspension systems. And dig further into those cryptic formulas for figuring out just what size of battery are you going to need, and whether you'll really need a parachute breaking system. - Ed.

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April 1994
NEWSLETTER

Inside:

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- ☐ Gobs of Good Info
- ☐ and much, much, more!

Next Meetings: April 23rd, 1994
May 21st, 1994
June, 1994

DPRG Meeting at the INFOMART
Rm. 1059
2:00 PM