Jan 18

Introduction

Doug Kelley welcomed everyone. Thirty folks showed up by 10AM and another 18 came by 10:30 bringing the attendance up to about 48.

General Announcements

Gary Teachout - The regional fire fighting robot contest is coming in two months so getting working on those robots. There are a few rule changes (see http://www.seattlerobotics.org/events.html for details) and our contest will happen after the regular March 15 meeting.

Doug Kelley - IRST - The 2003 International Robot Sumo Tournament is scheduled to happen in Seattle on March 18 (Tuesday). The reason its on a weekday is because the Japanese teams will be traveling in the US from Seattle (3/18), to San Francisco (3/20), and to L.A (3/22). during this week. The Seattle location hasn't been finalized yet but may be at the Seattle Center or somewhere in Everett. This will be for 3kg robots with a $2000 first prize. These contests are quick and high energy single-elimination events because of the large number of contestants in Japan. Mini sumo will be demonstrated at the event. See http://www.nwrst.com/ for details on this event.

ROBOTHON 2003 (http://www.seattlerobotics.org/robothon) will be at the Seattle Center in the Centerhouse (http://www.vrseattle.com/html/vrlist.php?cat_id=134) on Oct 24-26, 2003. The hack session will be on Friday night, preliminary stuff on Saturday, and regular events on Sunday. Note that this will be the first year that Robothon will cover Friday evening and the **two full days** following. This year's event should be even better than previous ones. A lot goes into making these events great. Contact Pete Miles at events@seattlerobotics.org if you'd like to help.

The Line Maze will be reduced from a 12-by-12 to an 8-by-8 foot area without curves but closed loops will now be permitted. See the Robothon link above for more details.

Tom Dickens - Soliciting technical papers for presentation at Robothon. See (http://www.seattlerobotics.org/robothon/papers.html) for details. This is an excellent opportunity to tell folks about some area of robotic technology development you are working on or something you believe would be useful to the larger robotics community. An abstract is due by June 5 so get going if you have something to present. If you're not sure about your topic, contact Tom directly and discuss it with him (see the bottom of the referenced page above).

A couple months ago, Tom was trying to develop really tiny code for 68HC11 to generate pseudo-random code. He succeeded in creating a program that is only 25 bytes long and generates a 64K byte pseudo-random numerical sequence. He sees this as useful in giving his robot's behavior some "randomness" that makes them seem more alive and can help them escape situations his programming may not have anticipated. It is the "sample" paper at the link above.

Doug Kelley - The following is the plan for contests and other special events for 2003 in addition to the regular Saturday meetings. Some of these events will occur on the same day as that month's regular meeting (RM).

- Feb 15 - RM Sat 10AM at RTC
- Mar 15 - RM Sat 10AM at RTC, **Fire Fighting Contest** in afternoon
- Apr 1 - *Encoder* published (article submission deadline Tue Mar 18)
- Apr 19 - RM Sat 10AM at RTC
- May 17 - RM Sat 10AM at RTC
- Jun 21 - RM Sat 10AM at RTC, **Line Maze Contest** - practice
- Jul 1 - *Encoder* published (article submission deadline Tue Jun 17)
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- Nov 15 - RM Sat 10AM at RTC
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- Jan 1, 2004 - *Encoder* published (article submission deadline Thu Dec 18)

Show-N-Tell

Ron Provine - F.I.R.S.T. kickoff is happening. The rules are somewhat more flexible and autonomous control is permitted at the beginning of a round giving such robots a 15 second head start over remote control-only machines. See http://www.usfirst.org for details.

Randy Carter - Successfully resurrected a twenty year old LED reader board. He had troubleshoot the unit electronically and disassemble the 68xx code to figure out how to interface to it. This should be a useful addition to Robothon and other public events. Great job, Randy!

Doug Kelley - Was working on a new body for his 3kg sumo and managed to break off two #4 taps in the aluminum. He was looking for ways to remove the taps from the holes. Several good suggestions including chemically dissolving them were offered. Tacoma Screw, SeaTac Nut & Bolt are possible sources. Also, it was suggested that he use lubricant next time. (Of course he figured this out on his own.)

A fellow showed off a cool little IR remote control car (http://www.nikko-rc.com/) that can be hacked to run using a Basic Stamp. See http://www.irbot.com for details on this hack.

Chris O'Dowd - Showed us some 2nd-generation "BioBugs" (http://robomaniac.solarbotics.net/biobug/biobug.htm) that he got recently at Discovery Toys. They are actually fighting dragons with both remote and autonomous control but they use "nervous nets" to guide their movements rather than a programmed microcontroller. They use a "LIDAR"-like sensor system (LIght Detection And Ranging) (http://www.lidar.com/) to detect

and avoid objects around them. Chris is also working on a crawling robot that uses Macintosh disk drive motors for drives. McDonalds windup toys have nice little gear boxes that can be hacked for small robots too..

Larry Richter (425-204-3266, LRichter@renton.wednet.edu) and **Geof Newing** (425-204-3298, GNewing@renton.wednet.edu) - Charles Lindberg High School - has opened shop to students, parents, and SRS members. There is a CNC mill, a foundry (Aluminum, cast iron, etc.), sheet metal benders, lathes, and a woodshop. They also have 4 Sony AIBO's (http://www.aibo.com/)+ 2 pups that are available to be programmed and played with.

Charles Lindberg High School (plug the address into MAPQUEST for directions)

16426 128th Ave SE Renton, WA 98058

Wednesday nights from 4:00 to 8:00PM on the following dates:

- Feb 5
- Mar 5
- Apr 2
- May 7
- Jun 4

Turn left into school at the reader board & park in the lot at the left. The tech area is immediately adjacent to the lot.

Mark Castelluccio - MRM (Mini Robo Mind) boards are for sale, see his website at http://www.robominds.com/ for details.

Feature Presentation #1 - Combat Robots

Pam, Rob, Richard, ?? -

These folks talked about several classes of combat robots they are working with and on and the contests they compete in. They brought "Pocket Monkey", "Strike Too", "Pooflinger", and "Death by Monkeys". The object is to disable your opponent within the 3-minute round. These machines range from "antweights" to heavy several-hundred-pound weapon-twirling vehicles of destruction. They are working toward a unified set of rules as the contests develop and evolve. Tiger Electronics (http://www.tigertoys.com/) makes toy models of some of the popular battlebots. Class sizes range from one to 375 pounds. Remote control is the current method of control but autonomous is permitted. The website for Western Alliance Robotics (W.A.R.) will be up soon at http://www.westernalliancerobotics.com. The one pound class will be demonstrated at Robothon 2003.

The batteries used on these machines can be purchased from a fellow (Steve Hill) who custom builds them to the size and specifications you require. Check him out at http://www.battlepacks.com.

Other Links:

- http://www.westernalliedrobotics.com
- http://forums.delphiforums.com/nwar/start

Feature Presentation #2 - The DARPA Challenge

Martin Calsyn - Talked about a robot he and number of other talented folks (Scarab Robotics, http://www.scarabrobotics.com) are building for a cross-country contest on Feb 28, 2004 with a single prize of $1,000,000 for success. You read that right, one million dollars! The gist of the contest is to build a machine capable of navigating itself from LA to Las Vegas autonomously. This is a 250-300 mile trek across terrain that would put most robots under and it must be done without any human intervention. The machine will likely be an ORV (off road vehicle) of some sort with enough intelligence built in to navigate between yet to be determined waypoints. For more information on the contest see http://www.darpa.mil/grandchallenge. You can contact the team at granschallenge@scarabrobotics.com. Project information on their website is at http://www.scarabrobotics.com/grandchallenge.aspx

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Afterwards

The structured part of the meeting ended around noon leaving folks to talk, do demos, ask questions, seek answers, buy T-shirts, buy & sell things, etc., etc., etc.

Feb 15

Introduction

Doug Kelley welcomed everyone. 29 folks showed up by 10AM and another 9 came by 10:30 bringing the attendance up to about 38.

General Announcements

Doug Kelley - Many regular SRS folks are at F.I.R.S.T. up at Roosevelt High School in the U. district. Many more are planning to head up there after the meeting. The regional competition will be April 5-6. See http://www.usfirst.org for details.

The regional fire fighting robot contest has been postponed a few months so you have more time to get working on those robots. There are a few rule changes (http://www.seattlerobotics.org/events.html) and our contest will happen sometime late this summer. The date will be announced later. Gary Teachout is currently the keeper of the FF maze and would like to be relieved of this responsibility. There is some effort in work to obtain safe, convenient, accessible, affordable storage facilities for SRS contest equipment and other hardware. Anyone with ideas or suggestions on this should contact Doug Kelley (president@seattlerobotics.org) or Pete Miles (events@seattlerobotics.org).

- Mar 15 - RM Sat 10AM at RTC, **NO Fire Fighting Contest**, postponed to a later TBD date.
- Apr 1 - *Encoder* published (article submission deadline Tue Mar 18)
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Doug is looking for suggestions and ideas for future meeting presentations to fill the in 30-45 minutes from 11:00-11:45AM. Technical presentations from conferences or expos that cover subjects of interest to the group could be presented. Sales demonstrations are also permitted as long as the product and presentation would be of interest to the group and there is no pressure to buy. A video projector for displaying laptop video can be provided if sufficient advanced notice is given. If you have something to show or know of someone who does, contact Doug Kelley at president@seattlerobotics.org. It was also suggested that we should start having afternoon workshop sessions on topics of interest to the group. Offer your ideas to Doug as well.

The *Encoder* was not published last month because there were only two articles in Kevin's hands. Write up something on a project you're working on or something robot or technology related that interests you. We need material for the next issue. This publication is probably one of the best of its kind on the web. Help keep it that way. Send your articles to Kevin at editor@seattlerobotics.org. Visit the Encoder Writer's Guide (http://www.seattlerobotics.org/encoder/wguide.html) for suggestions on format and content.

Show-N-Tell

Karl Lunt is continuing to working on his house robot. It has some basic sensors for detecting motion, obstacles, has a real-time clock for scheduling, wireless X10 (http://www.x10.com) remote control capability to operate lights and appliances using their "Firecracker" kit (search X10 website for "firecracker".). This robot is the subject of a new book he's working on. See his website at http://www.seanet.com/~karllunt/ for details. Also, he's written about this project in Nuts & Volts. Karl has several ***unpopulated*** 68HC12 boards left over that he is willing to sell for $15. Contact him at karllunt@seanet.com if you are interested.

Rich brought some cool pictures of one of Western Alliance Robotics' combat robots they are working on. This one has a mean-looking ditch-digging like weapon that looks like it could chew a hole through anything. I'm sure that's what they're hoping. Other combat robot related links:

- http://home.attbi.com/~antweights
- http://forums.delphiforums.com/nwar/start
- http://www.battlebots.com/
- http://home.attbi.com/~rustyants03 (not up yet or moved?)
- http://www.westernalliancerobotics.com. (not up yet.)

There will be small class combat robots demonstrations at the Pacific Science Center's "Robotics Week", April 9-13 (Wednesday through Sunday). The PSC website is http://www.pacsci.org. This event may not show up on their website until it gets closer to April.

Pete Miles - The 2003 International Robot Sumo Tournament is scheduled to happen in Seattle on March 18 (Tuesday) around 12:00 PM. The Seattle location will be at the Seattle Center in the Centerhouse in a conference room. This will be for 3kg robots with a $2000 first prize. These contests are quick and high energy single-elimination events because of the large number of contestants in Japan. Mini sumo will be demonstrated at the event. See http://www.nwrst.com/ for details on this event.

He showed us some of the cool work that the waterjet cutting system used where he works can do. He programmed the pattern for the body pieces of his 3kg sumo into the machine and cut them out of sheet metal with the most amazing precision and clarity. He left a couple bridge tabs to hold the pieces in place so they can be twisted free once everything is cut. Unfortunately, it isn't cheap to get this kind of work done because the machines usually run 24/7 doing other work and require considerable skill to program. He talked about the capabilities of waterjet cutters versus laser cutters and compared some of the advantages and disadvantages of each. Check out his company's website at http://www.ormondllc.com.

Jim Anunson showed us a cool line tracking robot base he's working on that uses a BotBoard2 (BB2). Jim is a member of the Port Orchard Robotics club chaired by Gene Elliot. These amazing boards are turning up everywhere, even in school classes. Sounds like a good excuse for Karl Lunt to work on a book on SBASIC.

Terry Laraway showed us some cool 2nd-hand store acquisition he recently came upon. They are simple battery powered walking machines that could be hacked into autonomous robots given sufficient time, money, and skill. He's intrigued by the walking robots though these don't do well on many common surfaces. He also had some literature for give away.

Larry Richter (425-204-3266, LRichter@renton.wednet.edu) and **Geof Newing** (425-204-3298, GNewing@renton.wednet.edu) - Charles Lindberg High School - has opened shop to students, parents, and SRS members. There is a CNC mill, a foundry (Aluminum, cast iron, etc.), sheet metal benders, lathes, and a woodshop. They also have 4 Sony AIBO's (http://www.aibo.com/)+ 2 pups that are available to be programmed and played with. Only four more opportunities left.

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Mark Castelluccio is building a two-wheeled balancing robot using the essential tools of robot building: a mill, a lathe, and a bandsaw. He plans to use his MRM (Mini Robo Mind) board for the brains. They are for sale from his website at http://www.robominds.com/. A general discussion ensued about where to get affordable tools of this type with suggestions including "Jetool" (Tacoma & Seattle) and Murphy Auctions (http://www.murphyauctions.com/).

Gene Elliot - Radio Shack is blowing out older model Palm Pilots for ~$100. http://www.radioshack.com

Ted Griebling is working on a new incantation of his famous "M and M" robot built into a machined brass body with integral gearbox. This tiny robot will collect and sort M and M's by color. Ted's work in robot miniaturization is truly remarkable.

Monty Reed (North Seattle Robotics) showed us a converted RC truck from Radio Shack that now has a Basic Stamp brain. It can be run by remote control, in autonomous mode, or in a mode where the Stamp filters the input commands from the RC radio to effectively slow the truck down. He has a second unit that will also be converted to this type of control. North Seattle Robotics meets at North Seattle Community College (http://www.northseattle.edu/) weekly from 2-4PM on Monday with lab from 2-4PM on Thursday in the CC building, Room CC-0-3-48A. They work on autonomous combat robots converted from remote control units, muscle wire,

exoskeletons, exosuits - enable severely physically disabled people to move. Contact Monty at (206) 527-3651 or northseattlerobotics@yahoo.com for more information.

Feature Presentation - The DARPA Challenge - The Scarab GCXC

Martin Calsyn - Continued his presentation from last month by showing us the experimental platform (Scarab GCXC) he and his associates are building and using to develop the software for a cross-country robot to enter into the DARPA Grand Challenger contest on Feb 28, 2004. There is a single prize of $1,000,000 to the robot that completes the course and NO SECOND PLACE! The object is to build a machine (Scarab GC1) capable of navigating itself (no human intervention allowed) from Los Angeles, CA to Las Vegas, NV autonomously. This is a 250-300 mile trek across terrain that would (an probably will) put most robots under. Their machine will likely be an ORV (off road vehicle) of some sort with enough intelligence built in to navigate between yet to be determined waypoints. Martin and his gang are going to LA on Feb. 22 to get the rest of the rules and, they hope, have many questions answered.

- Contest info: http://www.darpa.mil/grandchallenge
- Contact the Scarab Robotics team: granschallenge@scarabrobotics.com.
- Project information: http://www.scarabrobotics.com/grandchallenge.aspx

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Afterwards

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Mar 15

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No Information for this general club meeting.  Use your browser's back
button to return to the "minutes" file folder.  Sorry for the inconvenience.

SDK
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Apr 19

Randy Carter provided a video of a Scientific American Frontier (http://www.pbs.org/saf/) show hosted by Alan Alda was playing before the meeting started. This show focused on a number of contests including the human-powered underwater vehicle competition held in 2002.

The object was to complete the prescribed course in the shortest time. The fastest sub went over seven knots just by pedal power of a diver inside. It was pretty cool to watch.

Introduction

Doug Kelley welcomed everyone. About 36 folks showed up by 10AM with half a dozen new folks. Another half dozen showed up by 10:30. No one as a result of our presence at the Pacific Science Center robot event last week, mostly via our online presence.

General Announcements

Doug Kelley introduced a new idea to try to encourage more folks to actually build a robot. He wants everyone to bring the bits and pieces of robots whatever their state, and parts they have in their garage or wherever that may have been obtained with the good intentions of becoming part of a robot but haven't for whatever reason. The idea is to trade or swap parts with other members so that each person can end of with the parts they really need to make their robot(s). Also, time and ambition permitting, he'd like to see folks tackle working on their machines on the spot while we're together so we can help each other work though the roadblocks that keep us from succeeding. Please feed back your comments and ideas about this to the 'SeattleRobotics' list at http://groups.yahoo.com/. You'll need an account on Yahoo Groups to access it.

Several club members are graciously providing storage space for SRS contest arenas and other equipment but would like to be relieved of this responsibility. There is some effort in work to obtain safe, convenient, accessible, affordable storage facilities for SRS contest equipment and other hardware. Anyone with ideas or suggestions on this should contact Doug Kelley (president@seattlerobotics.org) or Pete Miles (events@seattlerobotics.org).

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The *Encoder* needs more articles in the editor's hands. Write up something on a project you're working on or something robot or technology related that interests you. We need material for the next issue. We haven't published this year yet and people are getting antsy. This publication is probably one of the best of its kind on the web. Help keep it that way. Send your articles to editor@seattlerobotics.org. Visit the Encoder Writer's Guide (http://www.seattlerobotics.org/encoder/wguide.html) for suggestions on format and content.

Show-N-Tell

Ron Provine talked about F.I.R.S.T. competition at U of W earlier this month (April 5-6). Talk to Ron if you are interested in getting involved. Doug K. was a judge this year. He was impressed with the amazing machines that are built in just six weeks. Larry Barello has mentored an eastside team and is also impressed with what the kids involved with these competitions do. For the first 15 seconds, automomous mode is permitted giving robots with this capability a head start. For more information on these competitions and the organization. See http://www.usfirst.org for details.

Ron brought his "toy box" of robots and other cool stuff he has built and collected over the years to show kids how sensors work, how hard robots are to drive, how cool they can be, and how much fun this electro-mechanical stuff can be. Stud sensors, ultrasonic sensors, servo demonstrators, etc. help make robotics more real and comprehensible. He would like to have more stuff like this. If you have candidate items you'd like to donate to this worthy cause, contact him at (vice-president@seattlerobotics.org). He had these items at the PSC event and they were a hit. Items must be pretty sturdy and durable since kids can be pretty tough on stuff.

The Robot Week event at the Pacific Science Center was a great success. Ron and Doug judged several contests. Many folks had the opportunity to see lots of different types of robots. The SRS did a sumo contest/demonstration for people. There needs to be more SRS members visible at these events showing their stuff and participating in the contests though. Many thanks to the folks who did show up and help out. Several SRS members competed in the RCX Challenge 6 (http://www.workshop3D.com/rcx) hosted by Ray C. Freeman III of Workshop3D.

Pete Miles - Robothon is only six months away, October 25-26. Get working on those robots, there is a lot of floor space available. Contact Pete if you have any new contest ideas, but try to

keep things practical and doable by many people. See http://www.seattlerobotics.org/robothon for details.

Pat & Chris O'Dowd - Active Electronics is gone. Radar Electric has moved to Bothell. See (http://www.radarinc.com/). There new address is 22214 20th Ave. SE, Bothell, Washington, 98021-8490, (425) 424-2002. Chris is working on a cool processor-less holonomic BEAM robot. He had it running around on the tables but needs to tweak some component values a little to get it to be more responsive to sensor input. See (http://www.acroname.com/robotics/info/PPRK/PPRK.html) for an idea of what this type of robot is.

Gene Elliot is also working on a holonomic robot (previous link) that uses three inexpensive toy motors mounted at 120 degree angles to each other and about 45 degrees down on a metal plate so that movement in any direction is possible by running different combinations of motors and speeds. These robots are fascinating to watch because they can stay pointed in one direction yet move laterally in any direction if their motors are properly controlled. Gene is also president of the Port Orchard Robotics Club over on the peninsula.

Terry Laraway brought a bunch of catalogs for giveaway.

Charles Lindberg High School - has opened shop to students, parents, and SRS members. There is a CNC mill, a foundry (Aluminum, cast iron, etc.), sheet metal benders, lathes, and a woodshop. They also have 4 Sony AIBO's (http://www.aibo.com/)+ 2 pups that are available to be programmed and played with. Only two more opportunities left.

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P.A.R.T.S. - The Portland Robotics Club is sponsoring a cool contest. The entrants must be walking robot that walk to a designated place and return to a starting point. The contest is scheduled to happen May 25. See http://www.portlandrobotics.org for details.

Hack Session & Swap Meet

Folks mingled, swapped, traded, and chatted about their machines and projects. **Larry Barello** gave a nice tutorial on H-bridges and showed some demos of how current flows and what exactly happens to make them work. You can see more on his website at http://www.barello.net. The structured part of the meeting ended around 11:00 leaving folks to talk, do demos, ask questions, seek answers, buy T-shirts, buy & sell things, etc., etc., etc.

May 17

Introduction

Doug Kelley welcomed everyone. About 35 folks showed up by 10AM with a dozen new folks. Another dozen showed up before the meeting ended bringing the total to about 50. Mostly heard about the club via the website.

General Announcements

Doug Kelley talked about WETOC (Washington Engineering & Technical Outreach Council). http://www.wetoc.org This is a new organization with the purpose of helping young people get started in careers in science and technology.

Doug announced that Kevin Ross is stepping down as *Encoder* editor after a long time doing this (seven years!). Tom Dickens has agreed to take over this task. As always, the *Encoder* needs more articles in the editor's hands. Write up something on a project you're working on or something robot or technology related that interests you. We need material for the next issue. We haven't published this year yet and people are getting antsy. This publication is probably one of the best of its kind on the web. Help keep it that way. Send your articles to editor@seattlerobotics.org. Visit the Encoder Writer's Guide (http://www.seattlerobotics.org/encoder/wguide.html) for suggestions on format and content.

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Doug Kelley is always looking for suggestions and ideas for future meeting presentations to fill the 11:00AM-12:00PM slot. Technical presentations from conferences or expos that cover subjects of interest to the group could be presented. Sales demonstrations may be permitted as long as: 1) the product and presentation would be of interest to the group, 2) the presentation is kept relevant to the diverse (wide age span) audience, 3) and there is no pressure to buy. A video projector for displaying laptop video can usually be provided if sufficient advanced notice is given. If you have something to show or know of someone who does, contact Doug Kelley at president@seattlerobotics.org. It was also suggested that we should start having afternoon workshop sessions on topics of interest to the group. Offer your ideas to Doug as well.

Show-N-Tell

Kevin Ross talked about the University of Washington RCM (Robotics, Controls, & Mechatronics) technology colloquium that the SRS board (minus Doug K.) attended on Friday, May 16. It was a great opportunity to see what's going on in the college research labs as well as tell them what's happening in hobby robotics.

We met Linda Bushnell (Assistant research professor), Kristi Morgansen, Assistant Professor and grad students Sean Howt and J.M. McNew for lunch in the Faculty Lounge, then were off for a whirlwind tour of the various robotics labs.

First we toured Dieter Fox's lab in Sieg Hall where he is doing work with Robocup AIBO robots and continues research with his particle filtering techniques. Then we toured the Automonous Mobile Robotics (ARM) Lab in Guggenheim where they were working on a LEGO robotic air-hockey system. Then we visited the Automomous Robotic Control Systems (ARCS) Lab also in Guggenheim. Then we went to the AERB Lab downstairs in Guggenheim, and witnessed a demonstration of a telepresence robot that was operated from here but located in a lab in Santa Barbara, CA. We chatted with several folks down south and even looked at our "body" in a mirror. Very cool! Then we went to Kristi Morgansen's lab where they are building a robotic fish. She hopes to have it swimming in the next couple months.

We went back upstairs to participate in the colloquium for the next hour. Kevin, Larry, Ron, and Pete talked about the SRS, FIRST, hobby robotics, Robothon, and where they see things going.

Afterwards we visited Blake Hannaford's Haptic Lab where we got to try out a tele-operated endoscopic surgical tool being developed. The formal name is "Computer-Controlled Motorized Endoscopic Grasper in Vivo". Blake is improving upon the capabilities of this $1M machine by adding force-feedback so the surgeon can "feel" what he's touching as well as see it.

All in all, it was a busy but informative afternoon. We saw a lot of cool things happening. A more extensive *Encoder* article on what we saw is planned for the next edition so stay tuned. In the meantime, you can find out more about the colloquium at http://www.engr.washington.edu/rcm/.

Ron Provine talked about F.I.R.S.T. (http://www.usfirst.org) competition at U of W earlier this month (April 5-6). Talk to Ron if you are interested in getting involved. Doug K. was a judge this year. He was impressed with the amazing machines that are built in just six weeks. Larry Barello has mentored an eastside team and is also impressed with what the kids involved with these competitions do. For the first 15 seconds, automomous mode is permitted giving robots with this capability a head start

Pete Miles - Robothon is only five months away, October 25-26. Get working on those robots, there is a lot of floor space available. Contact Pete if you have any new contest ideas, but try to keep things practical and doable by many people. See http://www.seattlerobotics.org/robothon for details.

Chris O'Dowd attended a BEAM (http://www.nis.lanl.gov/projects/robot/) robotics workshop, has new herd of robots. He showed us some cool solar robots and some motors from BIOBUGS that he bought. Has been working on solar robots which can be purchased from Solarbotics. (http://www.solarbotics.com).

Jim Wright is working on a new fire fighting robot (his 5th). He found HP encoders on e-bay and attached them to LEGO motors. He bought encoder model: HEDS-5505. The LEGO motors are very smooth and of high quality making this a great combination.

Rod had a bunch of pager motors which he used to construct a line-following robot without a microprocessor. This robot was built around a nine volt battery and moves by "scooching" along on a felt foot. He has the two pager motors mounted horizontally with the offset weights sticking out sideways. His line sensor system simply provides power to each motor in proportion to how much the robot needs to "scooch" left or right. With both motors running, the robot moves more or less straight ahead. By increasing the left motor, the robot "scooches" to the right. It moves slowly but was accurately following a black line drawn on a piece of white paper. He is also building a holonomic robot (see http://www.acroname.com/robotics/info/PPRK/PPRK.html for an ideas of what this is) but doesn't have it running yet..

Seattle University - Several fellows from SU are working on competing in the next Robocup (http://www.robocup.org), building robots for competition to be held in Italy. This is not the AIBO robotic dog competition but for free-form style of robots that use an overhead camera to read the positions of the "players" and coordinate their movement to try to get the ball into the goal.

Ron Provine - Simulation software for Robocup can be downloaded and/or created to enter into the simulation competition. There is a chapter in Karl Lunt's book "Build Your Own Robot"

about SRS member's participation in past competitions. Went to Vetco (now open Sundays) and was pleasantly surprised to find that they are expanding their bins of stuff from the old "basement". He found a couple IR RS-232 interfaces for $15 each that he hopes to use to control the PALM computers for small robots. Also, Ron has the steel 3kg sumo ring and can bring it to meetings if notified in advance. Contact him at treasurer@seattlerobotics.org.

Ryan - Kelsey Creek Homeschool - Using Mindstorms, built a very cool robotic dog built from LEGO pieces using two RCX bricks, a ratchet arrangement on the feet to permit moving forward, and various other motors to animate other appendages. The robot was programmed in NQC (Not Quite C), a popular programming language for RCX users. He used a book for which I missed the title as the basis. He started building in March. He is currently working on BASIC Stamp for BOEBot competition next year.

Terry Laraway brought a bunch of catalogs for giveaway.

Randy Carter is also working on a fire fighting robot for the next competition.

There is a place called **"House of Science"** which is an electronics surplus store, south of Market St. on 8th in Ballard. On 49th west of 8th in Ballard, WA.

Charles Lindberg High School - has opened shop to students, parents, and SRS members. There is a CNC mill, a foundry (Aluminum, cast iron, etc.), sheet metal benders, lathes, and a woodshop. They also have 4 Sony AIBO's (http://www.aibo.com/)+ 2 pups that are available to be programmed and played with. Only two more opportunities left.

Charles Lindberg High School (plug the address into MAPQUEST for directions)

16426 128th Ave SE Renton, WA 98058

One more Wednesday night from 4:00 to 8:00PM on June 4.

Turn left into school at the reader board & park in the lot at the left. The tech area is immediately adjacent to the lot.

P.A.R.T.S. - The Portland Robotics Club sponsored a cool contest, PDXBot03. The entrants must be walking robot that walk to a designated place and return to a starting point. They will have micro-sumo robots among other interesting things. The contest happened Sunday May 25 at Portland State University. See http://www.portlandrobotics.org for details.

Presentation

Jacob Eggler - International Schools Robotic Club. Larry Barello helped start the FIRST (http://www.usfirst.org/) team at this school. TITAN Robotics, FIRST Robotics Team 492 and

three FIRST LEGO (http://www.firstlegoleague.org/) League Teams. He showed us pictures of the competitions.

About 60 members in the club. Good core group that worked on the robots. They like a six-wheeled drive train system. He also showed us some video of a match they competed in and did pretty well. FIRST is a great opportunity for kids to get real-world science and engineering experience that is unlike anything else. There are lots of other tasks besides designing and building the robots. All the administrative tasks must be handled too. There are many different jobs available. Many volunteer opportunities for mentors.

FIRST mentors in the SRS: Ron Provine, Kevin Ross, Jim Wright, Doug Bell, Larry Barello, Ted Griebling. Larry is trying to pull together a full blown LEGO League competition here in Washington. A competition is planned for Dec 6, 2003 at Newport Highschool. See http://www.wetoc.org for details.

Feature Presentation

Larry Barello gave a great tutorial on how motors and H-bridges work and how to use H-bridges to control motors. He showed us some demos of how current flows and what exactly happens to make them work using an oscilloscope attached to a motor. The screen was projected on the front wall for all to see. Lots of questions and interest. Give Doug Kelley feedback (mailto:president@seattlerobotics.org) on this and ideas for other presentations you'd like to see. You can see more about Larry's work on his website at http://www.barello.net. Look under "Papers" for presentations he's done including this one.

June 21

Introduction

Upcoming Events:

Robothon Oct 25-26 at the Center House Sat: mini sumo, 3Kg sumo, line maze, fire fighting, antweight robot combat, judges awards Demo events: micro sumo, walking robot race Educational programs: FIRST, FIRST LEGO League, U of W, interactive displays Demos: combat robots, personal robots, professional robots, robotic show & tell Fun things: antweight rental, LEGO Mindstorms challenge, robot building workshop, technical papers.

See http://www.seattlerobotics.org/robothon for more specific info.

- Jul 19 - RM Sat 10AM at RTC - Line maze practice
- Aug 16 - RM Sat 10AM at RTC
- Sep 20 - RM Sat 10AM at RTC, **Election for Meeting Organizer / Sumo contest**
- Oct 1 - *Encoder* published (article submission deadline Wed Sep 17)
- Oct 18 - RM Sat 10AM at RTC
- Oct 24,25-26 - **ROBOTHON** at Seattle Center Centerhouse Friday night, Sat-Sun
- Nov 15 - RM Sat 10AM at RTC
- Dec 20 - RM Sat 10AM at RTC
- Jan 1, 2004 - *Encoder* published (article submission deadline Thu Dec 18)

Show-N-Tell

Some BEAM people [Solarbotics] have offered to do a BEAM building workshop for Robothon, but they would need us to supply sets of tools for each builder.

Next month: pre-order Robothon T-shirts, elect new officers Doug Kelley won't be running for next year.

PTC - CAD program http://www.ptc.com

Fire Fighter Fred [I think this was a robot designed in PTC]
Pro Desktop Express - another CAD program

Flashlight 186 - an SBC that runs DOS 3.3 for $69, 3 parallel ports, 2 serial ports, drives a dumb terminal as the DOS screen.

Gary Teachout - Remember the little vibrating robots we saw at the previous meeting? Gary Teachout brought a little robot he'd just made that was powered by three cell phone vibrators mounted on three wire legs. He had discovered that the method used by the vibrating robot from the previous meeting, where the vibrator motor direction controls the robot movement direction, doesn't work when the robot is heavier. Instead, he uses angled feet to force each foot to go in a fixed direction when the motor on that foot is energized. The robot continually turns in one direction, but moves by picking which foot to pivot around.

To move in a direction, he turns off the motor of one foot, which becomes a pivot, and runs the motors on the other two feet so that the robot pivots around the third non-vibrating foot. The central microcontroller was set up to run a long list of behaviors, selected by a pattern of pushes of a couple of buttons. There were a couple
of different sets of three sensors, some for proximity, some for light level, so the robot could avoid objects while moving toward the light, etc.

Larry Barello showed a new motor driver board he's selling for $49.95 without connectors or $59.95 with connectors. Most people don't use connectors, prefer to solder the wires directly for better reliability. This board takes two hobby servo style inputs and drives two motors. The

transfer curve is selectable, single stick mixing is an option. See http://www.barello.net/arc for details.

SRS should consider doing something to commemorate the upcoming Mars landings.

Some talk about BEAM robotics - http://www.solarbotics.com

Micro Engineering Labs PIC Basic Pro demo version

Doug Bell - There is a new beta version of Parallax Basic! [I just installed it, still evaluating it. It supports more block structure - if/then/statement (rather than just if/then/label), if/then/else on one line, if/then/elseif/else/endif, select/case/case else/endselect. I just ported one of my programs to the new block structure, but it grew from 58% full to 75% full, and I'm still investigating why.]

Several club members are graciously providing storage space for SRS contest arenas and other equipment but would like to be relieved of this responsibility. There is some effort in work to obtain safe, convenient, accessible, affordable storage facilities for SRS contest equipment and other hardware. Anyone with ideas or suggestions on this should contact Ron Provine (vice-president@seattlerobotics.org) or Pete Miles (events@seattlerobotics.org).

The structured part of the meeting ended a little after 12:00 leaving folks to talk, do demos, ask questions, seek answers, buy T-shirts, buy & sell things, etc., etc., etc.

Jul 19

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No Information for this general club meeting.  Use your browser's back
button to return to the "minutes" file folder.  Sorry for the inconvenience.

SDK
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Aug 16

Introduction

Upcoming Events:

Robothon T-shirts are in. Robothon is two months away. Oct 25-26 at the Center House Sat: mini sumo, 3Kg sumo, line maze, fire fighting, antweight robot combat, judges awards Demo events: micro sumo, walking robot race Educational programs: FIRST, FIRST LEGO League, U of W, interactive displays Demos: combat robots, personal robots, professional robots, robotic show & tell Fun things: antweight rental, LEGO Mindstorms challenge, robot building workshop, technical papers.

Please commit to two hours at the front table so this will be covered. Static Displays - set up, tear down - we must tear down our setup in the main hall Saturday night and set it up again for Sunday. We cannot move the tables - the Center House staff must do this. We can use one of our rooms at the Center House for storage.

Need photographers.

Pete passed around a sign-up sheet for Robothon volunteers. Event coordinators, scorekeepers, judges, check-in technicians, etc. are needed. The antweight event is being handled by WAR. Demo events are being handled by PARTS.

Next month we elect a new Club Meeting Organizer. Doug Kelley wishes not to perform this duty for another term.

There will be a Balancing Robot Symposium. The four known working balancing robots will be there.

Doug Bell mentioned that there is also a LEGO balancing robot. [LegWay, by Steve Hassenplug] See http://perso.freelug.org/legway/LegWay.html

Nuts & Volts has spawned a new magazine about robotics - Servo...? Two tentative contests: LEGO Mindstorms Challenge, BEAM Building

See http://www.seattlerobotics.org/robothon for more specific info.

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Show-N-Tell

Some BEAM people (http://www.solarbotics.com/) have offered to do a BEAM building workshop for Robothon, but they would need us to supply sets of tools for each builder.

Pete and his wife showed a four legged BEAM-like walking robot, and a dual axis accelerometer from Parallax (http://www.parallaxinc.com) with 0.5 mG resolution and + or - 2G range for $25.

Someone mentioned that the newer Maxim (http://www.maxim.com) RS232 chips automatically power down if there's no physical connection, to save power in portable devices.

FIRST LEGO League (http://www.usfirst.org) Signups - Larry Barello

The next AAAI (http://www.aaai.org/) conference will be in San Jose next year.

Ron Provine just came back from the IJCAI AI conference (http://www.ijcai.org), which was in Acapulco, Mexico. Notes on some things he mentioned:

- Ant Robotics
- Swarm Bots - http://www.swarm-bog.org
- Smelling robots, i.e., that follow a camphor trail -- http://web.port.ac.uk/research/c&r/robotics/smell.htm
- Odor sensing mobile robots
- Book: Odor Sensing for Mobile Robots, by Russell
- White board-reading network of robots which form their own language to describe what they see. Talking Heads Project. Loc Steels - headnet.csl.sony.fr/th/

Books:

- Simulating the Evolution of Language -- editors Angelo Cangelosi & Domenico Parisi
- Multi-agent Modeling of Grounded Language Evolution, by Luc Steels
- Behavior-based Programming of Robots and Multi-robot Teams, by Tucker Balch
- Ant Robotics, by Sven Koenig, Israel A. Wagner, Andrew Russell, Richard Vaughan, and David Payton
- Embedded Robotics, by Thomas Braunl (umlaut on the a)

For a few years, IJCAI has had a Grand Challenge, which is to build a robot that can successfully register for the conference. One year a team thought their robot was ready, but the conference happened to be held in a hotel with lots of transparent walls, which confused the robot so much it didn't do very well.

Rescue robots

Continuing around the room...sorry I didn't get people's names...

CMU Speech Recognition Software - NREC (http://www.rec.ri.cmu.edu/)

Vision Software

Coming up in 6 weeks: Frontiers in Evolutionary Algorithms

Naval Underwater Research

- The torpedo - an AUV (autonomous underwater vehicle) with an attitude! The Navy is convinced of the utility of autonomous vehicles, and will be spending heavily in this area.
- One AUV was powered by 9300 D Cells.
- Goal: eliminate the need for people in mine fields.

The young lady who didn't show her LEGO robot last month showed her maze robot, which featured a Tamiya ball caster (http://www.tamiya.com/english/e-home.htm), available through http://www.pololu.com, and maybe some Hobby Towns.

Hobby Town on-line (http://www.hobbytown.com/) is separate from the brick & mortar stores.

Ron Provine mentioned seeing at Radar Electric (http://www.radarinc.com) before they moved: Tin Oxide sensors that smell propane or carbon dioxide.

Local (Seattle area) electronics parts stores (other than Radio Shack): http://www.ee.washington.edu/stores/local_stores.html

Several club members are graciously providing storage space for SRS contest arenas and other equipment but would like to be relieved of this responsibility. There is some effort in work to obtain safe, convenient, accessible, affordable storage facilities for SRS contest equipment and other hardware. Anyone with ideas or suggestions on this should contact Ron Provine (vice-president@seattlerobotics.org) or Pete Miles (events@seattlerobotics.org).

Feature Presentation

Neural Networks by Doug Kelley

An artificial neuron consists of a multi-input sum, with a different weight on each input, connected to a comparator with a threshold which produces a binary output.

He set up a neural network with three layers of neurons, four in the first and second layer; two in the last layer.

He wrote a program to simulate this. He used genetic programming to come up with the weights. I forgot what his goal was, but he created 200 versions of his network, which he called "brains", put them through their ordeal, then kept the top 20%, cloned them, randomly altering the weights and thresholds, to make up 200 brains for the next cycle. Someone mentioned crossover, but I don't remember what was said.

Doug wrote his program in VB 6, and will make it available to the mailing list.

Google search for "neural networks" -- http://www.google.com/search?hl=en&lr=&ie=ISO-8859-1&q=%22neural+networks%22

The structured part of the meeting ended a little after 12:00 leaving folks to talk, do demos, ask questions, seek answers, buy T-shirts, buy & sell things, etc., etc., etc.

Sep 20

Introduction

Doug Kelley welcomed everyone. There were about 30 people in attendance at 10:00 with another ten coming by 10:15. I think there were close to 50 folks by 11:00. This is a great turnout for a sunny Saturday.

Doug an interesting display technology demonstrated on CNN. IO2 Technology uses a patented method of projection whereby they can generate a 2-D display image in the air above their projector without any smoke or mirrors. Wait till video games start appearing with this technology. See their website at http://www.io2technology.com/ for more details.

ROBOTHON 2003

Pete Miles - Robothon (http://www.seattlerobotics.org/robothon) is five weeks away. T-shirts are in and available for sale at $20 each. Give cash or checks payable to the **"Seattle Robotics Society"** to Pete Miles. Promotional posters were made available to those who have places to put them up. Just take what you need. An electronic printable PDF of this poster will be made available on the Robothon website soon. Watch for a message to the listserver from Pete.

Oct (24) 25-26 at the Center House at the Seattle Center.

Friday night (24th, 7-10 PM) will be a time to show off stuff. No contests or anything but a great time to talk & demo robots with other enthusiasts.

Saturday & Sunday (25th & 26th, 10A-5P) will be paper presentations contests, demos, workshops, etc. etc. etc.

Pete passed around a sign-up sheet for Robothon volunteers. Event coordinators, scorekeepers, judges, check-in technicians, etc. are needed. The antweight event is being handled by WAR. Demo events are being handled by PARTS. Please commit to two hours at the front table so this will be covered. Static Displays - set up, tear down - we must tear down our setup in the main hall Saturday night and set it up again for Sunday. We cannot move the tables - the Center House staff must do this. We can use one of our rooms at the Center House for storage.

** Need photographers.** Contact Pete Miles (events@seattlerobotics.org) if you can help.

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Club Business

Elected two new Meeting Organizers (MO).

Job description: The SRS currently has a good relationship with RTC. The MO must make sure room is available and unlocked. Show-n-tell format has been main basis and seems successful but other formats can be used. Arranging for presentations by people on topics of interest to the general membership seems popular. The MO is no longer club president since our 501C3 status now separates these roles. The term lasts one year and more than one person can do the job. Jim Wright accepted nomination as a co-organizer. Steve Kaehler also volunteered to assist Jim. Both were voted into the position(s). Jim will run next month's meeting. Doug Kelley is planning a technical presentation.

Show-N-Tell

Randy Carter - "Fireman Fred", a new fire fighter he is building. Uses a PC-on-a-board for the brain.

Pete Burrows - Building a new mini sumo. Brass tubing with "nut-serts" in the ends and lead between them inside the tube for weight. Pete uses a strategy where he moves toward but to one side of his opponent, then turns 90 degrees and pushes him from the side. He has a laser diode on his workshop setup that sights a bead on the target like the laser guides on guns. A very cool "intimidation factor". He might have this for Robothon. http://www.brookshiresoftware.com/

Jim Wright - Dissected a Logitec USB optical mouse ($10 low-end model) in response to a listserver question. There is an Agilent ADSNK2051 chip ($5-6) inside that provides several serial channels of data. Two quadrature encoders provide X (ch. A&B) & Y (ch. A&B) data based on the movement of the mouse on most surfaces. There is an optical sensor built into the bottom of the chip that samples an 18x18 pixel field at ~400 DPI at around 1500 times a second and figures out which way things are moving. It seems to work on practically every type of surface but glass. There is more info on the website. Check the Agilent website (http://www.agilent.com/) for data on the chip.

House of Science - In Ballard near the Ballard Bridge. Lots of cool surplus hardware. 825 NW 49th st. See http://www.houseofscience.com/ for more info.

Novatel wireless modems that are connected via a serial interface. Free give-aways. See http://www.novatel.com/ for more information.

Gary Teachout - Scientific American article on "plastic muscles" in latest issue. See http://www.sciam.com/article.cfm?chanID=sa006&colID=1&articleID=0003FCFC-BB3C-1F5C-905980A84189EEDF for a preview. Yes, you have to buy the magazine to get the rest of the story.

Karl Lunt - PSOC conference - Programmable-System-On-Chip from Cypress MicroSystems (http://www.cypress.com/) The chips run around $5 each. Greg Verge is willing to do a presentation at a future meeting on a practical application of the PSOC. Jim & Steve will coordinate this.

Power supply built using LT MOSFETs good for 9 amps. Linear Technology seems to have a full, uncrippled version of PSPICE available for free. See http://www.linear.com/ for more info.

Steve Kaehler - Built a holonomic (three drive wheels oriented 120 degrees from each other) ZNAP chassis. This product was produced for LEGO a few years ago and uses LEGO motors together with structural building struts. Navigation is tricky because sensors are needed to track orientation and position but this is not easy given the way the platform can move. Several people offered a variety of control suggestions including driving two wheels continuously while using the third for steering. See the following links for more information on holonomic drives and robots:

- http://www-2.cs.cmu.edu/~pprk/overview.html
- http://www-2.cs.cmu.edu/~pprk/physics.html
- http://cs.nmu.edu/~jeffhorn/Classes/CS490/Winter2001/holobot.html
- http://www.acroname.com/robotics/info/PPRK/PPRK.html

Talked to Chris O'Dowd offline about camera cell phones. They aren't cheap to operate even if they are "free" with a new phone plan. Some systems use airtime, others use data transfer quantity. The general impression I get is that the information on the Internet is very sketchy.

Ron Provine - F.I.R.S.T. is starting up. http://www.usfirst.org/. Needs volunteers and other helpers. The NW regional contest will be held in Portland rather than Seattle this year. Get registered early or you might end up going to San Jose instead of Portland. The money isn't due until Dec 5th. Kickoffs at the UofW and Corvallis U. on Sat. Jan 10th. Fred Martin has a book on LEGO robots called Robotic Explorations. Artificial Intelligence Conference - NIST put together a couple test courses to push the state-of-the-art for robots for rescue operations. Competition next year in New Zealand August 11-13 during PRICA/PRIMA 2004. See http://www.RescueMiddleEarth.cs.auckland.ac.nz/ for details. The next AAAI (http://www.aaai.org/) conference will be held in San Jose next year.

Chris O'Dowd - Has been playing with bi-cores, the fundamental BEAM robot base. He has achieved full bi-directional and turning capability with his robots. He's trying to build an antweight robot but is having trouble with his power drivers (L293D) overheating. He wanted to know if they can be stacked. The consensus was that the "D" models can be stacked to increase their current handling capability.

Local (Seattle area) electronics parts stores (other than Radio Shack):
http://www.ee.washington.edu/stores/local_stores.html

Several club members are graciously providing storage space for SRS contest arenas and other equipment but would like to be relieved of this responsibility. There is some effort in work to obtain safe, convenient, accessible, affordable storage facilities for SRS contest equipment and other hardware. Anyone with ideas or suggestions on this should contact Ron Provine (mailto:president@seattlerobotics.org) or Pete Miles (events@seattlerobotics.org).

Feature Presentation

None this month. Tune in next month, one is in the works.

The structured part of the meeting ended around 12:00 leaving folks to talk, do demos, ask questions, seek answers, buy T-shirts, buy & sell things, etc., etc., etc.

Oct 18

Introduction

Jim Wright, the new meeting coordinator welcomed everyone. There were about 50 people in attendance at the beginning of the meeting with another dozen showing up by 10:30. Six new folks came.

ROBOTHON 2003

Pete Miles - Robothon (http://www.seattlerobotics.org/robothon) is one week away!

Oct (24) 25-26 at the Center House at the Seattle Center.

Friday night (24th, 7-10 PM) will be a time to show off stuff ("Hack session"). No contests or anything but a great time to talk & demo robots with other enthusiasts.

Saturday & Sunday (25th & 26th, 10A-5P) will be paper presentations contests, demos, workshops, etc. etc. etc.

There are loading/unloading times for folks with equipment to display or get in or out of the facility. Friday (4-8PM), Saturday (8AM-12PM), Sunday (4-8PM).

Pete passed around a sign-up sheet for Robothon volunteers. Event coordinators, scorekeepers, judges, check-in technicians, etc. are needed. The antweight event is being handled by WAR. Demo events are being handled by PARTS. Please commit to two hours at the front table so this will be covered. This is easy duty and mostly involves selling T-shirts, raffle tickets, and pointing out stuff for people to check out.

Static Displays - set up, tear down - we must tear down our setup in the main hall Saturday night and set it up again for Sunday. We cannot move the tables - the Center House staff must do this. We can use one of our rooms at the Center House for storage.

** Need photographers.** Contact Pete Miles (events@seattlerobotics.org) if you can help.

The Solarbotics robot building seminar happens on Saturday from 10AM to 5PM. There still may be some open slots. Register at http://www.solarbotics.com.

Other Events

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- Jan 17 - RM Sat 10AM at RTC
- Feb 21 - RM Sat 10AM at RTC
- Mar 1 - *Encoder* published (article submission deadline Feb 16)
- Mar 20 - RM Sat 10AM at RTC
- Apr 17 - RM Sat 10AM at RTC
- May 15 - RM Sat 10AM at RTC
- Jun 1 - *Encoder* published (article submission deadline May 18)
- Jun 19 - RM Sat 10AM at RTC
- Jul 17 - RM Sat 10AM at RTC
- Aug 21 - RM Sat 10AM at RTC
- Sep 1 - *Encoder* published (article submission deadline Aug 18)
- Sep 18 - RM Sat 10AM at RTC

Show-N-Tell

Chris O'Dowd - Built a new BEAM robot using push-type solenoids that are mounted at angles and sequenced to cause it to move. The "Brain" is a "bi-core" hooked to a relay. Chris will have a table of his robots at Robothon.

Kevin Ross - Bought an Evolution Robotics ER1 for <$300. Laptop not included. It uses event-driven software that can be trained to recognize any object via a USB camera mounted above the laptop screen. The system is able to estimate distances based on a reference image at a known

distance. He and several other SRS members hepled evaluate the ER1 before it was placed on the market. This is a great robot for someone who doesn't want to do the mechanical or electrical development. It goes together with simple tools and Velcro. The ER2 is out now. See http://www.evolution.com for more details.

Ron Provine - F.I.R.S.T. kickoff yesterday. Highschool kids and adult mentors construct a competitive robot out of a kit of parts. (Other mentors: Ted Griebling, Kevin Ross, Jim Wright, Ron Provine.) There will be a display at Robothon. See http://www.usfirst.org.

Doug Kelley - Encouraged more people to enter 3kg sumo. He hacked together a rough machine that moves. He used a bunch of proven SRS technology that enabled him to pull if together quickly.

Karl Lunt - Cleaning out his closet, brought a bunch of stuff that is free to a good home.

Greg Verge - Contest to win free PSoC development kit. http://www.cypress.com. Has a linemaze robot that he is trying to get working.

Doug Bell - Brought the PSoC dev kit he got at the last local seminar and gave us a short summary of what a PSoC is and what you can do with one He told us about the PSoC (Programmable System-on-a-Chip) chip. Reconfigurable I/O on the fly that can be used to build lots of interesting circuits. Plans are in the works to have Greg Verge talk about these chips for a feature presentation in the near future. See http://www.cypress.com.

A cool mini sumo, "Big Wheel" (model aircraft wheel) that he hopes to have ready for Robothon, gutted two mini servos, uses an h-bridge to drive the motors, IR sensors (MarkIII), IR sensors on the bottom for line detection.

Someone thought Fry's may have a great sale on NiMH batteries going on. They are located next to the Boeing Renton plant (east side) at the south end of Lake Washington. Take the Coulon Park exit off of I-405 and go down the hill. You can't possibly miss the place!

Gene Elliot - Harbour Freight has a sale on Ni-Cd batteries.

Steve - Another mini sumo in work. Hopes to have it ready for Robothon.

Monty Reed - robotic "pants" will be on display at Robothon. He's looking for pneumatics help. NSCC Robotics Group meets on different days each quarter. See http://www.nsrg.4t.com for more information.

Tom - Optical mouse hooked up to sumo robot base so that the wheels move as the mouse is moved on a surface. He can sense speed and direction. H2000 chip has two types of outputs.

Terry Laraway - Craig Labs (Westlake Electronics) Low voltage/power contact cleaner, "D5". No silicon or other film left behind. Good stuff. Terry has used it for 20 years. There are a number of similar products for other applications.

Steve Kaehler - IEEE Spectrum Sept 2003, article on robotic musical instruments. Passed the magazine and prints of the webpages around the room. They even have video clips with sound but haven't tried listening to them yet. See http://www.lemurbots.org for more information.

Tell Jim Wright or me (or any board member via SRS Contacts page) what you want to see and hear about for presentations. It's best to email us so we have it in writing (it's harder to forget that way). We want to bring interesting people and technologies before the members. You all know people who are doing interesting things. Ask them if they'd be willing to do an informal presentation to our members. If so, pass along contact information to us, or if you would rather we contact them, just tell us who they are and how to get a hold of them and we'll take it from there. Contact us via email and we'll get in touch with them and try to set something up. We're currently looking for presentations for early next year.
http://www.seattlerobotics.org/contact.html.

Combat robots built from RC vehicle parts. Can be turned into pretty mean little "antweight" class (1 lb.) battle robots. See http://www.robotcombat.com.

A couple bookshelf speakers were offered free to a good home.

Gene Elliot - Built a "coffee can" foundry that can melt aluminum in 10 minutes and bronze in about 20 minutes. Has a stainless steel pepper shaker as the crucible. Could also cut off the end of a small empty propane bottle. Fire clay and sand used for insulation. See a previously published Encoder article about an earlier version of this type foundry he built.
http://www.seattlerobotics.org/encoder.html

Several club members are graciously providing storage space for SRS contest arenas and other equipment but would like to be relieved of this responsibility. There is some effort in work to obtain safe, convenient, accessible, affordable storage facilities for SRS contest equipment and other hardware. Anyone with ideas or suggestions on this should contact Ron Provine (vice-president@seattlerobotics.org) or Pete Miles (events@seattlerobotics.org).

Feature Presentation #1

"BATTERIES" by Larry Barello (SRS president)

Has a number of products that he sells for hobby robotics including processor boards and motor controllers.

Larry talked about some of the popular battery technologies of recent years and how they are typically used. He showed some examples of what's available through the surplus and retail markets. Search for "batteries in a portable world" on the web to find the handbook Larry referred to that talks about rechargeable batteries, their chemistries, charging and discharging characteristics, and applications. He recommends that you buy a good charger because this can have a significant effect on the service life of your batteries and can avoid a catastrophic failure

(rupture or explosion) of the batteries. Also, be sure to properly dispose of batteries (http://www.rbrc.com) when they are no longer useable.

American Science & Surplus

- http://www.buchmann.ca\default.asp

- http://www.FMADirect.com - Lithium polymer

- http://www.maxxprod.com - prismatic

- http://www.sciplus.com

See his website (http://www.barello.net/) for the full PowerPoint presentation given at the meeting.

Feature Presentation #2

"EAGLE PCB DESIGN & LAYOUT SOFTWARE" - by Jim Wright (SRS meeting organizer)

Jim demonstrated the basic capabilities of this software. The **free** version can do two layer (double-sided) boards. More layers cost $$. It's a pretty good program with an extensive component library included even in the free version. It can also be used simply as a documentation tool for drawing electronic schematics. Jim will show some more features and capabilities at a future meeting. See http://www.cadsoftusa.com for more information.

Questions to answer at a future meeting: How do you get PCBs made from the data generated by this program? How do you make my own PCB's using the data from this program?

Conclusion

The structured part of the meeting ended around 12:20 leaving folks to talk, do demos, ask questions, seek answers, buy T-shirts, buy & sell things, etc., etc., etc.

Nov 15

Introduction

Jim Wright welcomed everyone and introduced the SRS. About 60 folks showed up on a rainy, gray Saturday; a perfect day for doing robotics. Four new folks came.

"W.A.R." T-shirts ordered by the local combat robot group were brought for sale to interested parties..

Show-N-Tell

Terry Laraway - Brought SERVO magazine, a robotic oriented magazine put out by Nuts-N-Volts (http://www.nutsvolts.com/). Cool magazine for robot experimenters.

Ron Provine - ASIMO (made by Honda) robot put on shows at the Pacific Science Center Sat. (11/15) and Sun (11/16). http://asimo.honda.com/

Ron went to Standford University on business and had a ton of fun while spending lots of money. He bought "Robot Mechanisms & Mechanical Devices" by Paul E. Sandin which is published by McGraw-Hill. It goes for $40 or less online.

R2D2 was the inspiration that got Ron into robotics. Brought a toy R2D2 that he got for Christmas last year. It was $120 at that time. It is probably still available. Speaker independent voice recognition (that works!), simple obstacle avoidance, dual drive motors that permit it to move like R2 does in the movies.

Doug Kelley - The club presented a plaque and a gift for Pete and Kris Miles to show our appreciation for all their hard work in pulling Robothon together. This event is extremely well received and a great event for people to see hobby robotics in action. Great job, Pete & Kris!

At next May's meeting, 3kg & mini (1kg) sumo and line maze contests. Also, a big, new contest will be annouced. Details will be available at the May 2004 meeting.

Doug has been playing around with the GPS datastream from a Garmin GPS II+ connected to his laptop. Data specs: 4800 bps, 8 bits, 1 stop bit, no parity. See http://www.garmin.com for more information on GPS units in general. Treasure hunting using your GPS unit (http://www.geocaching.com) and more info on pulling data out. Also, search for "NMEA". It's pretty easy to get data out of these into a laptop. Current accuracy is limited to an area about 8'x12' due to the resolution of the data stream. Better accuracies can be achieved but only with a local differential reference station. WAAS (Wide Area Augmentation System) can also help.

The possibility of doing a group buy/build of the Solarbotics sumovore robot was suggested. See (http://www.solarbotics.com) or contact Solarbotics for details of the kit. Solarbotics will not be sponsoring this event if it happens. It will be coordinated internally by the SRS.

Kevin Ross - F.I.R.S.T. (http://www.usfirst.org) teams are forming like crazy and mentors are needed throughout the area. Contact Kevin (kevinro@kevinro.com) if you are interested in helping, even for short periods. Sat. Dec 6 (10-3PM) WS FIRST LEGO League robot contest (LEGO Mindstorm) at Newport Highschool. The school is near where I-90 and I-405 meet.

Greg Verge brought a really cool little RC tank (mini master) tank. It seems to be close to the right size for the really tiny (nano) sumos. See http://www.minirctoy.com/main/DetailsList.cfm/item_id/1719/item_key/609/301-1101033-1994896 for more information.

Jeff Schaber - brought in the robot toy, Roboscout, (http://www.roboscout.com/) that has been discussed on the listserver (Sharper Image) the last couple weeks. The remote has a lot of functionality. Color video camera on the remote is really cool but hard to really navigate with because of the limited peripheral view. SLA batteries, remote is rechargeable. Doesn't run too long on batteries but works pretty well. These are available for about $120 from the website. The unit is a great platform for the money. There is a computer interface available for these but it's pricy. http://www.itsarobot.com. Also see http://www.robin-hewitt.com/roboscout/index.html for cool hacking details.

General questions:

- How many folks have never been to an SRS meeting before? 4
- How many folks are building at least one robot semi-actively? ~25
- How many folks are hear because of Robothon? 4

Pete Miles - All ROBOTHON T-shirts are sold out, still had some posters left but they went fast. Pete is now writer for "Ask Mr. Roboto" column in SERVO magazine put out by Nuts-N-Volts. Anyone up for a game of "Stump Mr. Roboto"? This magazine needs materials and subscribers to keep it going. Hobby robotics is a great field but not very many people are willing to write about what they are doing.

Robothon (http://www.robothon.org) was a great event that was well attended and worked as a two-day event.

QMatric QT60040 - Quantum Research Group Ltd. 4-key charge transfer IC. See http://www.qprox.com/products/qmatrix.php for details.

Chris O'Dowd - playing with robot walkers. Cool walker that can sense when it runs into something and can back away and turn. He uses bicores (http://www.beam-online.com/Robots/Circuits/bicore.html) to drive each leg. This allows construction of robots that have no microprocessor "brain" yet behave like a living creature. In fact, they seem to act like insects would when held and released. He's built a whole box of these guys.

About six folks who attended the Solarbotics (http://www.solarbotics.com) Workshop at Robothon. A couple folks brought the finished kits from the workshop to show. Ron Provine suggested that we do a group order/build of a bunch of mini sumo robots and have some hacks sessions to put them together.

Boeing Surplus (http://www.boeing.com/assocproducts/surplus/) on East Valley Highway in Kent, WA, there are lots of great raw materials for building robots. There is also a store in southern California. See http://www.boeing.com/assocproducts/socalsurplus/ for details.

If you have something interesting you'd like to talk about at an SRS meeting, please contact Jim Wright (SRSMeetOrg@jimwright.org) or Steve Kaehler (sdk6772@yahoo.com) and we'll coordinate with you, give you suggestions and information, and try to answer your questions.

Events, Contests, Presentations, etc.

- Oct 18 - RM Sat 10AM at RTC - Pres: Larry Barello:Batteries, Jim Wright Cadsoft Eagle PCB layout S/W
- Nov 15 - RM Sat 10AM at RTC - Pres: Greg Verge:PSoc, Jim Wright:Cadsoft Eagle PCB layout S/W cont.
- Dec 20 - RM Sat 10AM at RTC - Sumo soccer contest, Pres: ??
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Feature Presentation #1

Feature Presentation#1 - Greg Verge - Cypress Microsystems - PSoC - **Programmable System on a Chip**

Greg built a two-PSoc line maze. He started working on a mini sumo type robot but didn't get very far. He talked about PSoCs in general and as they can be applied to robotics. He showed off a couple demonstrations. One was a motor speed controller that used several different methods for pulse modulation, all done with a PSoC. The website is http://www.cypress.com

MASLab - http://maslab.lcs.mit.edu/index.php

Regular Meeting Conclusion

Jim Wright talked about a new contest that uses mini sumo robots to play soccer on a special 2'x4' field. It has a black floor, white walls and a white line around the edge. It has two 5" openings in the middle of each end. Some challenges will be to identify the goals and detect the difference between the ball and your opponent. Jim will have a draft of the rules at next month's meeting.

The structured part of the meeting ended around 12:15 leaving folks to talk, do demos, ask questions, seek answers, buy T-shirts, buy & sell things, etc., etc., etc. Folks who planned to come back for Jim's presentation went to grab some lunch.

Presentation #2 - After lunch break (~1:00PM-3:00PM)

"EAGLE PCB LAYOUT SOFTWARE" - by Jim Wright (SRS meeting organizer)

Jim continued his demonstration of the capabilities and possibilities of this software. The **free** version can do two layer (double-sided) boards. More layers cost $$. It's a pretty good program with an extensive component library included even in the free version. It can also be used simply as a documentation tool for drawing electronic schematics. About 12 folks participated. See http://www.cadsoftusa.com for more information.

Dec 20

Introduction

Steve Kaehler welcomed everyone and introduced the SRS for the benefit of newcomers. About 50 folks showed up by 10AM. More came later. Half a dozen new folks came.

Events & Announcements

Larry Barello (current SRS president) talked about the FIRST LEGO League contest that happened over the Dec 6-7 weekend. FIRST starts in late December. Larry & a number of other SRS members are heavily involved with F.I.R.S.T. teams. Visit http://www.usfirst.org for more details.

Show-N-Tell

Chris O'Dowd showed us his latest BEAM creation the walks like a swimmer swims, by breast-stroking the ground. He still needs to tune it but it moved. He also gave away two large DC motors. See http://www.beam-online.com/Robots/Circuits/bicore.html for more info on bi-cores.

Kenneth Maxon showed us an amazing robot he's been working on. It is a two-wheel balancer (using two-axis accelerometer) that has stereo vision with pan/tilt control the cameras, a laser range finder, eight ultrasonic and IR distance sensor arrays ring the middle of body. It uses a homemade motor drive system. The main brain is a 220 MIPS Motorola Coldfire controller with 32MB of FLASH, 8MB of RAM and 16MB of backup FLASH. Controller piggy-backs with three vision processing systems (color Phillips video processors).

Alex & Steve Kaehler like to work together building contruction toy (LEGO (http://www.lego.com, K'NEX (http://www.knex.com) machines like robot walkers, MechWarriors (R), wheeled vehicles (steering cars), etc. The legged walkers have locking knees just like people but are tricky to motorize into real walking machines because of the limited capabilities of the stock motors. These structural construction toys are a great way to shortcut the engineering process since a great deal of clever engineering is already done for you. There are also now many great kits out there for all types of robots including wall followers, light seekers, walkers with obstacle avoidance, and many others. These are great for bringing you and your kids together as you build things. For example, see http://www.robotstore.com.

Alex & Steve built a K'NEX six-legged motorized (one motor) walker based on one of their standard models but incorporated two motors so the left and right legs could be controlled independently for steering. The K'NEX motors were modified for control by one from an off-the-shelf walker kit Alex received for his birthday.

Steve demo'd a hovering saucer vehicle (Vectron Ultralite) unsuccessfully. It worked great at home but doesn't seem to like fluorescent lights. The reason the demo failed was probably the fluorescent lights in the classroom that seem to interfere with command codes sent to the IR receivers. The vehicle looks like a concave fan blade sitting on its launchpad, but spins as a flying saucer when it's on. It has a motor, propeller, batteries, and an IR remote speed controller that allows one to control the motor's speed to make it rise or hover in a room. There's no way to steer it however. They can be had on the Internet for $30-$60. Search for "vectron ultraliite" on the web (http://www.google.com/search?hl=en&ie=ISO-88591&q=vectron+ultralite).

A fellow showed a Handyboard for mini sumo robots (http://www.1sorc.com) for $135. He also found a parts holding jig from Digikey (http://www.digikey.com). He showed a couple mini sumos he's been working on including a 3kg model with magnets that can run upside down on a steel plate. Sounds like an interesting variation for a new sumo contest.

Finally he showed a cool little (2" long) RC tank toy that he found. He bought a bunch so he could get a good price but they are available for around $10 individually. Search the web for "mini RC tank" to find them. Someone thought FRY'S had these for around $10. See http://www.minirctoy.com/main/DetailsList.cfm/item_id/1719/item_key/609/301-1101033-1994896 for a typical example.

Doug Kelley talked about Robothon 2004 which is scheduled at the Seattle Center Centerhouse on Sept. 24, 25, & 26. The format will be similar to Robothon 2003 (http://www.robothon.org) with a new mini sumo ***soccer*** contest (join the "SumoSoccer" Yahoo Group (http://groups.yahoo.com/group/SumoSoccer/) for more info and to see previous emails). This contest uses mini sumo robots to play soccer on a special 2'x4' field. It has a black floor, white walls and a white line around the edge. It has two 5" openings in the middle of each end. Some challenges will be to identify the goals and detect the difference between the ball and your opponent. A draft of the current rules were presented.

A special contest will be announced at the May 2004 meeting. Some clues are:

- A GPS would be handy but not necessary
- An all-terrain chassis will be needed
- More clues to come

Pete Burrows talked about a new chassis conversion for the MarkIII mini sumo (http://www.junun.org/MarkIII/). The new chassis offers more speed, a lower profile, uses the MarkIII scoop and controller. He has some laser cut parts (http://www.pololu.com or 1-877-776-5658) for $13.

There is a robot info website (http://www.botsandbytes.com) that provides a collection of robot design information and parts for sale. For example, they have a robot kit called the Green Alien for under $100 and many other offerings.

A fellow was looking for help designing a robotic rivet inspector. He's looking for high position precision and repeatability so that a follow-on repair robot can locate and repair the identified rivets.

PRO/Desktop Express (an excellent MCAD design tool) licenses expired Dec 31st. Visit http://www.ptc.com/ for more info.

Doug Bell showed us an LED flashing thing he built from a PSoC (Programmable System-On-a-Chip, http://www.cypress.com). These are very cool little controllers that contain building blocks that can be programmatically interconnected even on the fly.

Ron Provine had some Robothon T-shirts for sale. He is using an AmigoBOT (http://www.amigobot.com/) at Boeing to do environment searching but would like help from kids to figure out the sensor systems.

If you have something interesting you'd like to talk about at an SRS meeting, please contact Jim Wright (SRSMeetOrg@jimwright.org) or Steve Kaehler (sdk6772@yahoo.com) and we'll coordinate with you, give you suggestions and information, and try to answer your questions.

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Presentation #1 - "Lloyd's Excellent Robot Adventure" - by Lloyd Spencer

Lloyd visited a number of places where robotics has taken the place of other industries. Many have sprung up to replace industries that have died out such as the steel industry in Pittsburg, PA. The many applications of robots fall into two primary categories--service robots and personal robots. Service robots perform functions in business applications like circuit assembly, automobile painting, hazardous material handling, and bomb disposal. Personal robots are used mainly for their amusement value and application in people's homes like vacuuming and chasing the family cat. Visit CoroWare at http://www.coroware.com for more details and information.

Presentation #2 - "Interfacing to LEGO Sensors" - by Larry Barello (SRS president)

Larry gave us an overview and introduction to the sensors used on LEGO Mindstorms. These sensors are easy to use, virtually idiot proof having no polarity sensitivity, and can provide both analog and digital response to various stimuli. LEGO currently sells sensors for temperature, light intensity, rotation angle, rotation counting, mechanical movement (switch), yet they do everything with just two non-polarized wires. The interface works like this:

- Apply power (5-9VDC)
- Remove power
- Read the voltage across the wires

Larry demo'd the line and rotation sensors using his AVR board. See http://www.barello.net/ARC/projects/LEGO/index.htm for more information.

Regular Meeting Conclusion

The structured part of the meeting ended around 12:15 leaving folks to talk, do demos, ask questions, seek answers, buy T-shirts, buy & sell things, etc., etc., etc.
