Jan 19

SRS Meeting Announcement for
January 19 at 10:00 AM
Renton Technical College

(Note: Due to my (SRS Secretary) absence, the following pre-meeting announcement will have to suffice for whatever happened. No one else took notes for me. Sorry for the lack of info. SDK)

"Doug Kelley" <doug.kelley@alaskaair.com>
Subject: Next Meeting

Our next meeting will emphasize robot sumo; bring your bots! If you are planning to bring a 3Kg machine, please let me know. We won't bring the big ring unless there are at least four robots who want to run on it.

We are also going to have a swap meet. Now that Christmas is over, you probably need to make room for a few more toys. Bring all the old stuff you no longer think you need and bring lots of cash/checks. If you pack something in, and don't sell/give it away, be sure to pack it back out!

Since table space will be a premium, please don't take a table unless you need it.

Agenda:

10:00 - 10:30 Swap Meet
10:30 - 10:45 General Meeting
10:45 - 11:00 Sumo Presentation
11:00 - 12:00 Sumo Practice

--SRS Prez Doug Kelley

Feb 16

SRS Meeting Announcement for
February 16 at 10:00 AM
Renton Technical College

(Note: Due to my (SRS Secretary) absence, the following pre-meeting announcement will have to suffice for whatever happened. No one else took notes for me. Sorry for the lack of info. SDK)

"Doug Kelley" <doug.kelley@alaskaair.com>
Date: Tue Feb 12, 2002 9:48 am
Subject: Next Meeting

It looks like I can talk about the company who will be coming to our February meeting! Evolution robotics is a new robot company with a different idea. What they want to do is build a robot OS that can run on standard PC computers. The idea is that they will provide all the low-level software like navigation (they are in talks with Dr. Dieter Fox who presented at an SRS meeting last year), voice recognition, vision, etc. The user would then build robot applications on top of their OS. The OS is (essentially) hardware independent.

Evolution is looking for people interested in building interesting software to work on their OS. I've been told they will have a special deal for club members at our meeting on Saturday.

I think this could be a huge boost for hobby robotics. Imagine taking your most sophisticated robot design and considering it as a starting point... Now what would you build?

See you Saturday!

Doug

Good morning everyone,

Quick! go get a USA Today; Evolution Robotics has a feature article in the Money & Life section. Also, the demo at DEMO (http://www.DEMO.com) was a big success (keep a look out on CNN too). Finally, we are now in the public domain! This said you can now show and talk to people about what you've been doing. The only limitation on information we ask is regarding future business strategies of Evolution Robotics.

Thanks to everyone for your input--it has been very beneficial and has definitely helped us focus on what is required for the retail kit (available late March, though we are taking orders now). Again, we will be making a much requested Windows version available, but not until sometime in May.

Also, check out the new, greatly expanded website (http://www.evolution.com). TO GET IN TO THE DEVELOPER SITE: for username, type in your email (not your name as before). Your password should still be the same. Let me know ASAP if you have any problems.

Thanks again,

Chris Manson
Developer Program Manager
Evolution Robotics, Inc.

Mar 16

SRS Meeting Announcement for
March 16 at 10:00 AM
Renton Technical College

(Note: Due to my (SRS Secretary) absence, the following pre-meeting announcement will have to suffice for whatever happened. No one else took notes for me. Sorry for the lack of info. SDK)

"Doug Kelley" <doug.kelley@alaskaair.com>
Date: Wed Mar 6, 2002 7:48 am
Subject: March Meeting

Pete Miles will show his newly published book (along with Tom Carroll) about building a combat robot.

Finally, we will have the Northwest regional Fire Fighting competition.

Should be a great meeting...

Doug

General Meeting of the Seattle Robotics Society
at Renton Technical College

on
April 20, 2002 from 10:00 AM to 12:00PM in Room J314 of the Electronics Building

(Note from SRS Secretary: Sorry I haven't posted any meeting minutes for a while. I haven't made a meeting since January but I'm back. I'll try to get to future meetings more consistently. SDK)

Introduction

The April meeting started on time with a welcome and a few general announcements from SRS President Doug Kelley. We were back in room J314 which unfortunately gets a little crowded for a group our size. Attendance started around 66 at 10AM and reached 80+ by 11:30. There were 6 new folks. No students from ITT Tech or RTC that I saw.

Doug talked about the robotics event at the Pacific Science Center (http://www.pacsci.org/default.html) a week ago and reported that there were many visitors to the SRS booth and lots of Robothon brochures handed out. Some folks demonstrated several combat robots though safety reasons prevented any ripping or tearing of robots. They did catapult a stuffed monkey out into the audience to demonstrate one of the robot's flipping weapons. TrainBuilder Productions (Dan Parker dnvpark@gte.net) presented a LEGO train layout (see http://www.pnltc.org/) and some cool robotic LEGO models. The PSC staff provided AIBO (http://www.us.aibo.com/) demos, Ray C. Freeman III of Workshop3D Design Studio (http://www.workshop3d.com/) conducted the fourth annual RCX Challenge (http://www.workshop3d.com/rcx), S.M.A.R.T. (http://news.lugnet.com/org/us/smart/) members demonstrated some of their LEGO robot creations. All in all it was a fun, busy day at the PSC.

Next Month

Doug Kelley is working on getting someone who has a Segway (http://www.segway.com/) to bring it to the next meeting for demonstration. No guarantees yet but he'll try. Watch the listserver for announcements about this and other meeting activities.

Robothon

Pete Miles, Robothon Event Coordinator, talked about how Robothon 2002 (http://www.seattlerobotics.org/robothon/index.html) is shaping up. The event is coming up May

4th and looks to be the premier robotic event in Seattle. T-shirts and raffle tickets will be on sale after today's meeting. Advanced purchase of these items saves the SRS the 15% commission that the Seattle Center charges for items sold on their property.

The hack session on Friday night from 7-10PM features Dave Anderson (http://www.geology.smu.edu/~dpa-www/myrobots.html) all the way from SMU (Southern Methodist University) in Dallas, Texas. He will be talking about his pendulum balancing robot and other topics of group interest.

For Robothon competitors, register your robots (http://www.seattlerobotics.org/robothon/index.html) ASAP and arrive 15-30 minutes before your event to get checked in and set up. The schedule for the day will be tight so don't be late for your events or things might happen without you.

Pete is looking for some folks to help out at Robothon with contest administration and manning the SRS booth. Contact him at events@seattlerobotics.org if you can help. Pete has some car passes available on a first-come-first-served basis to allow a few folks to drive onto the Seattle Center property. However, they are limited in number and will only be provided to those who really need them. If you have equipment to display, bring it on Friday night. A locked room will be provided to keep things secure. Contact Pete at events@seattlerobotics.org for details.

Robothon 2002 will host the regional BotBall competition (http://www.botball.org/). This competition uses LEGO-based robots programmed to accomplish some designated task inside a time limit. The contest are fast-paced and exciting. The biggest challenge is the programming since most kids now can put LEGO bricks together pretty quickly. There is the possibility that help may be needed later. Keep this in mind if you like working with kids in an energetic enterprise.

(Below are some helpful hints from the Trinity College website regarding traveling with your robot(s) and support equipment. My sincerest appreciation goes to Jake Mendelssohn (webmaster for TC Fire Fighting Contest) for gathering and posting this info. Perhaps it will be useful to travelers coming to Seattle for Robothon 2002 or other contests.)

AIR TRAVEL SECURITY INFORMATION

The level and intensity of airline security and passenger/luggage inspections has increased dramatically recently. In order to help avoid problems for people traveling to the contest with their robots and equipment, we have contacted the agencies in charge and have gotten the following advice:

1. Call your airline carrier at the airport you will be leaving from and tell them the date, time and flight number you are traveling on. Tell them about the contest and what equipment you will be taking with you. Ask for their help in getting through security.
2. Arrive at the airport at least 2 hours before your flight is scheduled to leave and go directly to

the airline office. Do not try to go through the security inspections without their help. Ask the airline representative to contact the Ground Security Coordinator for help in passing the security inspections.

3. <u>The most important thing to remember in this scenario is not to surprise the security personnel</u>. Let them know before they search you and your equipment what you are carrying and exactly what it is. You may want to put together an equipment list and give this to them.

4. Whatever they ask you to do as part of the inspection, no matter how silly it may seem, do cheerfully and happily. If you acquire an attitude, you may spend the contest weekend sitting at the airport. The security people tell us that they handle these sorts of situations all the time and clearing security should not be a problem if you follow these suggestions and plan ahead.

5. Be sure to also tell the airline personal what flight you will be using SeaTac Airport when you leave the contest at so that they will be ready for your departure.

Once again, the more they are prepared for you, the less problems you will have.

This link provides phone and email contacts to SeaTac Airport Security:
http://www.portseattle.org/contact/default.htm

Show-n-Tell

Greg Fredricksen showed us his latest creation, "Freddy the Security Guard". This robot features a laser guidance system, ultrasonic and IR feelers, a synthesized voice that warns intruders, and really cool multi-color chaser lights around its circumference. It also connects with his house via wireless X10 sensors that give it input based upon the states of doors, windows, motion sensors, etc.

Doug Kelley showed us his 3Kg sumo that he built mostly from COTS (commercial off-the-shelf) hardware. He bought hobby motors and two R/C ESC's (electronic speed controllers) to run them. The microcontroller and software are ready but he has to finish putting the mechanical parts together. He anticipates having a competitive sumo for Robothon. He says this may not be the cheapest way to get into a robot contest, but it is a lot easier than building the electronics yourself.

Several folks brought some catalogs for give away.

Ron Provine - The regional F.I.R.S.T. (http://www.usfirst.org/) competition was amazing. Ron brought along the robot his team designed and built. Ron has some SRS business cards available for sale (25 for $5) if you have opportunity to use them. Contact Ron at vice-president@seattlerobotics.org if you would like to buy some. There are also a few Robothon 1999 T-shirts available in limited sizes for $20. Perhaps they will become collectors items.

One fellow bought the Portland Robotics Mark III sumo kit (http://www.junun.org/MarkIII/Store.jsp) for $75. This is a great starter kit for getting into mini sumo and other small robot competitions. The package comes complete with everything you need to build a functioning robot. Larry Barello makes an AVR-based board for the Mark III that he sells from his website (http://www.barello.net). Larry's advice for robot builders is that good

tools make for a better, more enjoyable robot building experience. Don't shortcut this element or you may regret it.

There is a contest called PDXBOT.02 coming to Portland on Sunday, May 19 at Portland State University. Check the club's link (http://www.portlandrobotics.org) for details.

Several other folks showed off some cool regular and mini sumo, and line maze robots. Robothon should be an outstanding display of robotics.

There was brief discussion about the National Semiconductor (http://www.national.com/) LMD18200T and LMD18201T. These devices are self-contained motor control H-bridges that run about $12-$20 ea but can be obtained as samples (http://www.national.com/search/psearch.cgi?keywords=lmd18200) from NSC. They can supply 3A continuously with peak currents up to 6.5A. One caveat is that you supply more than 12V to them or they simply shut off.

On June 1 the Northwest Robotics Competition at Lindberg High School will take place. Awaiting more detailed info. I will update this file on Yahoo Groups (see link below) if and when more is available.

The Northwest Robot Sumo Contest hosted by Bill Harrison of Sine Robotics (http://www.sinerobotics.com) took place from 1:30-4PM at Edmunds Community College Seaview Gymnasium. See Bill's website for details and contest results.

Karl Lunt has embarked on a project to port SBASIC to the Macintosh. Check his website (http://www.seanet.com/~karllunt/) for details on this project.

Feature Presentation
We had an excellent presentation by Jeff Slostad, Chief Engineer of BlastOff! Inc. He told us about his work on the Mars Polar Lander robotic arm. Jeff enjoyed the work and learned a great deal about robotics during his time on the project and enthusiastically shared this with us. His role initially was just to develop the arm. He performed many tests on the arm and experimented with all kinds of approaches to accomplishing the mission goals. He had to make something capable of surviving extremes of heat and cold. No liquid lubricant was used due to the environmental extremes and he didn't try to "test" the arm systems in space like others tried to do with their systems. Also, the camera had "eye brows" to clear dust from the lens. Jeff eventually earned the role of payload manager since he knew more about it than practically anyone else. Sadly, this spacecraft (http://mars.jpl.nasa.gov/msp98/index.html) lost contact with earth in late 1999 as it neared its destination and presumable crashed into Mars without accomplishing its intended mission. He doesn't regret working on the MPL but wished it had at least landed in one piece. One the important lesson learned on MPL is that you should always "Test what you fly, and fly what you test".

You can learn more about him and see most of what he presented at http://www.marsguy.com.

Afterwards

The structured part of the meeting ended around noon leaving folks to talk, do demos, ask questions, seek answers, buy T-shirt and raffle tickets, etc., etc., etc.

If you're interested, there's pizza at Pegasus on Sunset Blvd after the meeting. Directions from RTC: Head north (left) on Monroe Ave NE (east side of RTC). Follow this about a mile to 12th St (stop sign). Turn left and go down the hill to the traffic light. Turn right onto Sunset Blvd. and follow it about 0.8 miles. Pegasus is on the right (south side of the street).

This file is archived on Yahoo Groups at
http://groups.yahoo.com/group/SeattleRobotics/files/Monthly%20Meeting%20Minutes/.

Submitted by Steven Kaehler, SRS Secretary, secretary@seattlerobotics.org

May 18

Introduction, Robothon, and other Contests

The meeting started on time with a welcome and a few general announcements from SRS President Doug Kelley. Attendance was around 50 at 10AM. I forgot to recount later. We talked business for the first 15 minutes and nominated and re-elected Pete Miles as Event Coordinator. Pete did a great job organizing Robothon 2002 but this doesn't happen without lots of help. Consider joining the Robothon Planning Committee and offering a hand to Pete to help make Robothon 2003 even better.

The Friday night pre-Robothon hack session drew about 50 people to look at, talk about, and demonstrate robots. Dave Anderson, of the Dallas Personal Robotics Group (http://www.dprg.org/), sent an interesting video about his self-balancing robot. You can find some technical information on some of Dave's robots on his website at http://www.geology.smu.edu/~dpa-www/myrobots.html He also has some pictures and MPEGs about his balancing robots at ftp://geology.heroy.smu.edu/pub/users/dpa/robo/balance. The video will likely be added to the club's video library and soon be available for checkout. Visit the Database section of SeattleRobotics group on Yahoo Groups (http://groups.yahoo.com/group/SeattleRobotics/) to sign up when it is added.

Robothon 2002 (http://www.seattlerobotics.org/robothon/index.html) was very successful in crowd size (about 3,000 folks) and robots (100+). This helps make all the effort worthwhile. Pete has a number of lost&found items. Contact him at events@seattlerobotics.org if you think he may have something of yours. There are a few small and large Robothon T-shirts left and lots of mediums. They can be purchased for $20 each until gone.

The Seattle Times had an article on Sunday, May 5 about a couple robots including Pete Burrow's Nemesis II and Ted Griebling's M+MBot. The link below points to the text of the article. (http://archives.seattletimes.nwsource.com/cgi-bin/texis.cgi/web/vortex/display?slug=robots05m&date=20020505&query=may+2002+robot)

Doug talked about the next Robothon and says some changes are coming:

- The new 500g and 3kg sumo rings will be made of steel and robot-mounted magnets will be permitted. This change is partly because the 3kg sumos really tear up the ring material and so vacuum-based contests may be run.
- The line maze will be reduced from nine panels to four with a time reduction of 3 mins/round to 2mins/round. This is intended to speed up the rounds and simplify the contest a little, however, loops will also now be permitted. A robot will have to know (by odometry?) whether or not it has already visited an intersection from a different direction. The right/left hand maze algorithms will no longer work so more sophisticated software will be needed to find the quickest path.
- Other line maze materials are being investigated such as a single sheet of vinyl to eliminate the joints. These will be discussed at future meetings.

- The fire-fighting contest (http://www.seattlerobotics.org/events.html) will be back with a substantial first place cash prize to any **_new, previously unused_** robot that wins.

The Portland Area RoboTics Society's annual competition and exhibition happened on Sunday, May 19. Check http://www.portlandrobotics.org/PDXBOT/index.html for detailed contest results.

Ron Provine is interested in getting some small (1kg) combat robots going. He wants to make tank tracks and is looking into some options. There was also interest expressed by in having real combat robot demonstrations but more room and safety barricades would be needed. Contact him at vice-president@seattlerobotics.org for information.

Larry Barello's Balancing Robot - "Gyrobot"

Larry Barello shared an interesting technical talk about his latest project, a small two-wheeled balancing robot (like Dave Anderson's). Larry explained the theory and algorithms on which he based his robot and some of his problems and the robot's shortcomings. He demonstrated that it does balance though more fine tuning is required to achieve the level of stability he wants. This type of mobility certainly has some coolness to it if not practical advantages. It is also not trivial. It is a logical step towards walking robots that balance themselves, however and so serves that end as far as a learning experience.

You can find more info, pictures, and technical details about it on his website at http://www.barello.net/Robots/gyrobot/index.htm.

Balancing robot links for the interested reader

- Balancing LEGO Bike -- http://www.cs.bham.ac.uk/resources/courses/robotics/halloffame/2001/team15/
- EyeBot Ballybot -- http://robotics.ee.uwa.edu.au/eyebot/robots/ballybot.html
- Pole-balancing Robot -- http://www.ece.nus.edu.sg/showcase/pole.htm
- Another Pole-Balancing Robot -- http://www.techsource.com.sg/home/March%20Issue/new%20html%20files/Cover%20Story.html
- David P. Anderson's Balancing Robot Archive -- ftp://geology.heroy.smu.edu/pub/users/dpa/robo/balance.
- Design News - Segway^{tm} HT -- http://www.manufacturing.net/dn/index.asp?layout=articleWebzine&articleId=CA200964&stt=001
- Analog Devices 2-Axis Accelerometer -- http://products.analog.com/products/info.asp?product=adxl202
- How a Gyroscope Works -- http://www.accs.net/users/cefpearson/gyro.htm

- ["In Air" Mouse -- http://www.gyration.com](http://www.gyration.com)

The Segway^{tm} Human Transporter (HT)

Doug Kelley arranged for the local sales team from Segway Corporation (http://www.segway.com/) to bring and demonstrate there self-balancing mobile transporter platform. Bruce Green (Bruce.Green@Segway.com) and Chris Wendling of Segway (425-739-0889) gave engaging presentations on the features, merits, and capabilities of the Segway HT. The machine was quiet, quick, amazingly agile, and very cool. We were given some background information on the company and the machine's inventor, Dean Kamen, Chairman and CEO of DEKA Research (http://www.dekaresearch.com/), Segway LLC, and founder of F.I.R.S.T. (http://www.usfirst.org/). This machine applies technology developed for the INDEPENDENCE^{tm} iBOT^{tm} Mobility System (http://www.msnbc.com/news/285231.asp?cp1=1), a four-wheeled, motorized, stair-climbing, two-wheel-balancing wheelchair.

Bruce introduced us to the Segway Corporation and gave us an overview of the Segway HT as a product. Chris followed with a more detailed, technical explanation of the unit's design and operation. We were treated to the technical overview of the product in a most impressive way. Chris gave his entire presentation while standing on the unit and moved fluidly about the front of the room. The machine seemed to be a natural extension of his legs and was steady enough for him to write on the whiteboard as clearly as if he'd been standing on the floor. Many safety features have been incorporated to ensure that the machine remains in the operator's complete control and will protect its rider, pedestrians, and itself from harm. Engineering innovations applied to the sensors, controls, and propulsion make the machine a truly remarkable and well-thought out product. Current marketing and sales are aimed at industrial and government customers in order to establish a positive first impression and user expectation in the public arena as they see and interact with this machine for the first time. It is desirable to Mr. Kamen and Segway that users learn to be responsible in their use and application of the machine. Consequently, retail sales of the machine will not happen for a while. The presentation concluded with an opportunity for interested folks (practically everyone) to take the machine for a short test drive. Most attendees had the opportunity to ride the Segway HT and all were impressed with the quality of its engineering, the extent of its capabilities, its operational simplicity, and the curious sensation of standing on a active dynamically-balanced platform that moves as you lean. Visit the website (http://www.segway.com/) to learn more about this amazing machine and to sign up for information feeds as they are announced.

The March 25, 2002 issue of Design News Magazine (http://www.designnews.com/) had a nice writeup about the Segway HT oriented toward the engineering aspects of the device. The article included lots of technical details about the hardware used. Also check http://segway.weblogs.com/ for more web articles on it.

Show-n-Tell

We had so much fun with Larry's Gyrobot and the Segway HT that we never got around to this. Bring those bots and other interesting projects back next month.

Afterwards

The structured part of the meeting ended around noon with most folks dashing out to the college courtyard to ride the Segway HT which went on for over an hour until Bruce had to pry himself away from the remaining group.

General Meeting of the Seattle Robotics Society
at
Renton Technical College
on
June 15, 2002 from 10:00 AM to 12:00 PM in Room J314 of the Electronics Building

Introduction

The June meeting started on time with a welcome and a few general announcements from SRS Vice President/Treasurer Ron Provine standing in for President Doug Kelley. Attendance was around 48 people total.

Show-n-Tell

Larry Barello has an "ant-weight" combat robot motor controller that he is selling. He also showed a new line maze mat material that rolls easily into a much more compact form that the big plastic squares. He also has AVR microcontroller kits for sale that can be programmed with free tools available on the web. These kits can be built and programmed successfully by kids. There was a brief discussion about "nanobot" class combat robots that weigh a pound or less. Check Larry's website at (http://www.barello.net/) for detailed information. Larry has also posted some information on the Yahoo! Groups fileserver in the "Files" section (http://groups.yahoo.com/group/SeattleRobotics/files/AvrMiniSumo1.0/) on his Mini sumo AVR board.

Steve Kaehler passed around a handful of engineering magazines with robotic or cool technology articles or information. Ron asked about the Encoder and when the next issue would be out. Steve (and others) have emailed Kevin Ross and haven't heard back from him. We don't know what the current status is but people do miss it. Kevin posted a message a while back saying he'd get it out soon, but so far nothing. Editing the Encoder probably takes more time than any other SRS board position and there's no pay. I'm sure he would welcome help from any and all who would like to assist him.

A fellow brought in an "Amaze-A-Matic" card programmable model car that he bought on eBay recently. This toy car (http://www.aaa-multimedia.com/amaz.htm) was first introduced in the late sixties. A cardboard or plastic card is inserted into the back end and gets pulled slowly through the undercarriage of the vehicle. Notches on one side control steering while notches on the other side control the drive motors. It is programmed by cutting notches in the left and right sides of the card. The car can be programmed to go straight, turn left or right, stop, and go forward or backward.

Pete Burrows, first place winner of the Robothon Mini Sumo contest, shed some light on a question people have had about his robots. He uses stereolithography (http://www.howstuffworks.com/stereolith.htm) to construct his sumo robot bodies. This technology permits digital models (CAD's) of practically anything to be built layer by layer from a resin or sintered material that is hardened by a laser beam. Using this technology has enabled him to construct those nasty-cool wedge-shaped robots that perfectly fit his drive wheels while hugging the game surface. This technology is used extensively to construct models or prototypes of items quickly and less expensively that machining and constructing them by hand. The most common systems build plastic components, but work is being done to create sintered **metallic** parts that are as strong as cast.

Pete queried the club's opinion on an interesting twist in sumo strategy. He wants to know whether it would be legal to "tell" his robot where the opponent is and how it's oriented by entering this information into a some sort of simple user interface on his robot prior to starting the five-second wait. His robot's strategy would be adjusted based on this information. The general consensus was that this is not legal, but the rules don't *specifically* prohibit it. The ultimate ruling would have to come from the contest operators or be made by the decision of a general assembly of the Tournament Committees held according to the Rules of Tournament Committees. Current mini sumo rules: (http://www.sinerobotics.com/sumo/mini-sumo.html). Current Japanese class sumo rules: (http://www.fsi.co.jp/sumo-e/out/outa0000.html). No definite conclusion was reached.

Terry Laraway & Gene Elliot brought a bunch of catalogs for give away.

A free mechanical design program called ProDesktop Express (http://www.prodesktop.net/) was mentioned and endorsed by a fellow who has used it extensively. It can be upgraded for a fee to do more complex modeling, but the free version is surprisingly powerful. It is somewhat like SolidWorks (http://www.solidworks.com/). For more information: (http://www.ptc.com/products/desktop/index.htm)

Anton Staaf (anton@socialhacker.com), an inventor/entrepreneur visiting from San Diego, CA, showed us a cool electronic LED image/message generator product he's developing. The device is attached to the end of a tether that you swing around in a circle. It senses its attitude and position using a solid-state accelerometer and powers selected LED's at just the right time to display a message or image. He is using an Analog Devices ADXL202 accelerometer, a moderately priced, +/-2G, two-axis device. Datasheet: (http://products.analog.com/products/info.asp?product=adxl202). Visit his website at http://www.socialhacker.com for more information on his projects.

Feature Presentation
Gary Teachout (http://www.seattlerobotics.org/encoder/200011/garyt.html) did an excellent presentation on flame detectors for fire-fighting robots. This is one the toughest challenges to building a fire fighter because there are so many things that can fool sensors. Gary has tried many types of sensors over the years and has learned a lot about the strengths and weaknesses of each.

Types of flame sensors

Far Infrared, **8-10** microns
    Devices
        Eltec 442-3, Pyroelectric sensor
    Advantages
        Sees only heat, not visible light
        Easy to interface
        Fast?
        Narrow field of view?
    Disadvantages
        Fooled by other heat sources and warm spots
        Pricey, **$51.00** from Acroname
    Notes
        Differential output?

Optical, **600-1,000** nanometers, visible and near Infrared
    Devices
        Panasonic PN168, phototransistor, 600-1,000 nanometers
        Panasonic PN109L, IR phototransistor, 750-1,000 nanometers
        Photodiodes
        CDS Photocells
    Advantages
        Wide variety of devices, with different spectral responses and fields of view
        Cheep, **$0.20-$3.00**
        Fast, **2** nanoseconds to **300** microseconds
        Easy to interface
        Work with conventional optics
        Candle spectrum peeks near this range
    Disadvantages
        Environment is noisy at these wavelengths

Ultraviolet, **185-260** nanometers
    Devices
        Hamamatsu R2868, UVTron flame sensor
    Advantages
        Very flame specific, not easily fooled by other light or heat sources
        Interface boards available
    Disadvantages
        Reflections
        Difficult to interface*
        Slow, **1** to **5** pulses per second ?
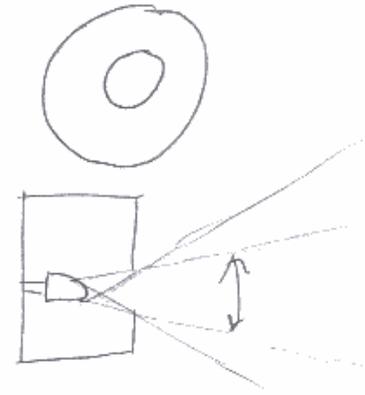   Pricey, **$65.00** from Acroname
   Note
        Pulsed output

Optical considerations

Field of view vs. signal to noise ratio
    A single detector sees the sum of all the light shining on it
    The background will look brighter to a wide field detector
    The candle will look just as bright to a wide or narrow field detector
    The more wall it can see the less bright the candle is by comparison

    It is ok for the candle to drive the sensor to saturation
    The background must never drive the sensor to saturation

    Width of collector, distance to aperture, width of aperture
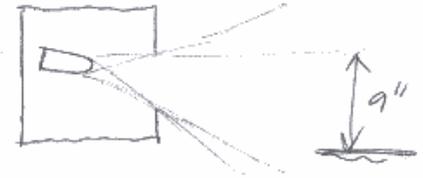
    Multiple detectors or scan a single detector

Don't look up
    The bright spot of the candle flame will always be between **six** and **nine** inches off the floor
   The world above the wall is unstructured and much noisier

Software   Is the candle in view or not? If so where?

Fixed thresholds may not work
    Candle brightness can vary with the size of the wick and the composition of the wax, etc.
    When the candle is **five** feet away it is **100** times dimmer than it is at **six** inches

    The background can vary based on distance and illumination
    A brightly lit wall can look brighter than a small or distant candle flame
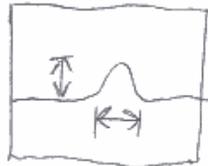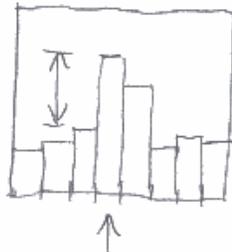
Subtracting out noise
    The candle will be a narrow peak in the data
    Other bright spots, including reflections of the candle, tend to be wider and less distinct

LC
    Candle = (brightest - second brightest) or (brightest - third brightest)

Other notes
LC
    Horizontal field of view is about **five** degrees
    Vertical field of view is about **twenty** degrees
Candle
    Temperature from about **1,000K** to **2,000K**
    Black body spectrum peeks at about **1,200nm** (1,000 to 2,000nm)
Other light sources
    100 Watt tungsten bulb **2,865 K**, about **1,000nm**
    Halogen **3,200 K**, about **900nm**
    UV < **400nm** < Visible < **700nm** < Near IR < **1,200nm** < Far IR

From some of the questions asked, Gary said that multiple sensors help eliminate false positives on sensor hits. He likes to use an array of similar sensors to give a good view of targets in the field of interest but then back them up with a different sensor type to confirm or deny the array's findings.

You can learn more about Gary and his creations on his website at http://www.seanet.com/~garyteachout/.

Afterwards

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

For those interested, there's lunch at Pegasus Pizza on Sunset Blvd after the meeting.

Directions from RTC:
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This file is archived on Yahoo Groups at
http://groups.yahoo.com/group/SeattleRobotics/files/Monthly%20Meeting%20Minutes/.

Submitted by Steven Kaehler, SRS Secretary, secretary@seattlerobotics.org

Jul 20

Introduction

The July meeting started on time with a welcome and a few general announcements from SRS President Doug Kelley. Attendance was around 70 people total.

General Announcements

Ron Provine - Robothon "Medium" T-shirts are $10; we have too many of them! We have two "Smalls" and two "Larges" left for the regular price of $20.

Pete Miles is looking for volunteers for Robothon 2003. If you are interested, please contact Pete at events@seattlerobotics.org.
The Floor Exercise will be eliminated at Robothon 2003. Instead, the Judge's Award will be expanded.

You can purchase Pete Miles and Tom Carroll's book on building combat robots can be obtained from Amazon.com at:
http://www.amazon.com/exec/obidos/ASIN/0072194642/seattleroboticss/

SRS Board position elections will be held in September at the regular meeting. Contact Doug Kelley if you are interested in a position.

Current board members:

- The President: Doug Kelley - president@seattlerobotics.org
- The Vice President and Treasurer: Ron Provine - vice-president@seattlerobotics.org
- The Secretary: Steve Kaehler - secretary@seattlerobotics.org
- The Event Coordinator: Pete Miles - events@seattlerobotics.org
- The Encoder Editor: Kevin Ross - editor@seattlerobotics.org
- The Webmaster: Kevin Ross - webmaster@seattlerobotics.org

Show-N-Tell

Ryan Wistort received 3rd place in the World Science Fair.

Bob Dyer - A fuzzy pendulum project he's working on (his comments appear below):

I've been interested in Fuzzy Logic for nearly 15 years, though I've done little more than read about it. When I took up microprocessors again as a hobby after an 8-year hiatus, I found the Motorola HC12 had internal fuzzy logic instructions. In fact, that's how I found the SRS by doing a web search on the HC12. Several Encoder articles popped up.

The classic name for what I want to do is the "inverted pendulum problem". I just think of it as balancing a broom upside-down on my hand, as I did when I was a kid. The inspiration for my specific project is an idea from a book I read on fuzzy logic where they suggested balancing a live mouse on a tiltable platform.

Originally I was going to build an X-Y translation slide. I envisioned it much like an old Etch-a-Sketch mechanism, where the X and Y position of the base would be controlled independently by two motors. The design was fairly complicated (but doable I believe) and construction was slowing down my progress.

When David Anderson from the Dallas Personal Robotics Group (http://www.dprg.org/) posted his movies of the cart that balanced a ball in one dimension, I was inspired once again. I changed my mechanical design to a wheeled platform, but added a second axis (side-to-side) perpendicular to the single axis he had.

My project is currently assembled mechanically, and virtually all the wiring is complete and has been checked out. I'm using two stepper motors driven by the chopper/driver boards that Kevin Ross sells on his web site. They're based on the old bipolar Thomson L297/L298 driver pair. The microprocessor is also from Kevin Ross (http://www.kevinro.com/). It's his new HC12D60 board. I'll be writing the code in Assembly.

The tilt sensors are potentiometers that I've mounted on a custom made gimbal that I based on an old R/C joystick design. The power is from 14 C-cell Ni-Cd batteries. I have an onboard 2x16 pixel LCD and seven LEDs for diagnostics along with six pushbutton switches for data input. The drive wheels are R/C airplane wheels from a local hobby shop and the front caster, which can move easily in all directions, is a holonomic drive wheel from Acroname.

I've used polycarbonate for the battery box and board mounting chassis because it's strong and very easy to machine. As opposed to Acrylic, it can easily be drilled without breaking, and it is very easy to tap threads in it. Additionally I've used carbon-fiber tubing and carbon-fiber plate for strength and some weight reduction. However, with 14 batteries and two stepper motors, the unit is pretty heavy.

The actual design criteria was to keep as much of the mass as close to the pivot point as possible. This reduces the moment of inertia for the required side-to-side movement. Hopefully, the motors will be powerful and responsive enough to perform their assigned task.

I'll continue to bring it to SRS meetings until it's complete. I've gotten a lot of good suggestions from other members in after-meeting conversations. I'll continue to hold that as a good source of information.

Other projects in work by various members were also displayed or discussed.

G.E.A.R. - Great Escape And Retreat - **Annual Robotics Campout Friday Aug 9th & Saturday Aug 10th**

Gene Elliot - Camp host - "Well it's that time of year again, so were planning our annual campout. Bill Harrison (Mr. Sumo, http://www.sinerobotics.com) and I will be meeting at the State Park just south of Westport. (Twin Harbors Campground). Were going to be camping **Friday Aug 9th & Sat Aug 10th**, with Bill in site 80 which is near a large parking area & I'll be in my motorhome at site 23. There are lots of spaces left for those who might want to join us and camp for the weekend, but we would like to invite everyone who might be interested for the main activities Saturday 2pm - 6pm. Yes I know this is a little far away for a quick Saturday drive, but believe it will be loads of fun. Bring your hot dogs, drinks, Oh and don't forget your outing robot stuff. See You All there!!!!!!!"

Go to http://www.access.wa.gov to make reservations. Click on "Recreation" in the yellow box then "Camping Reservations" under "Camping".

Cool sunset photo (http://www.worldisround.com/articles/3275/photo4.html) taken near campground.

Presentation 1

Doug Bell - How to use Piezo touch sensors.

I was inspired by an article in the book Robot Builders Bonanza (http://www.amazon.com/exec/obidos/ASIN/0071362967/seattleroboticss/) and by having many times passed by the bin of piezo transducers at Vetco (http://www.vetcosurplus.com/) wondering what I could do with them. The article tells how to use similar piezo transducers, usually used as alarm speakers in smoke alarms, etc., as touch sensors.

Returning to Vetco and looking at the sensors more closely, I noticed that they didn't seem to have places to solder contacts. I talked to the proprietors - they pointed out that there is a thin metal coating on the piezo button to which you can solder a wire. I also found one transducer in the bin to which wires had been
soldered.

The price on the bin was $0.85 each. I asked for a deal on 10 transducers, and received 10 for the price of 8.

Trying it myself, I found that if you're quick, it isn't hard to solder a wire to the thin metal coating. If you're not quick, your iron can melt away the coating, in which case you can try again on another spot. Solder a second wire onto the brass plate, either on the same side or the opposite side.

Connecting a crystal earphone directly to the transducer, I found that dragging the transducer over any surface produced enough sound to be heard in the earphone.

The article warns that with sufficient deflection of the piezo material, an arbitrarily large voltage may be produced, so when connecting the sensor to a microcontroller, you should protect the input with a Zener diode.

I reasoned that in addition to this, it may work to add a standard half-wave voltage doubler circuit (using two capacitors and two diodes) which would output a positive voltage corresponding to the peak-to-peak voltage envelope from the transducer, so that the microcontroller would always receive a positive transition no
matter how the transducer was tweaked by whatever touched it.

I've been investigating this at NSRG (North Seattle Robotics Group) meetings (northseattlerobotics@yahoo.com). So far, I've figured out that since the transducer is basically a capacitor, the first capacitor of the voltage doubler circuit isn't needed. So, my current circuit consists of a zener diode across the transducer, then a diode to a capacitor. I've been trying different sizes of capacitors and parallel load resistors to get the time constant right.

I also investigated the arbitrarily large voltage capability at the last Weird Science meeting, by connecting the transducer to a neon bulb and striking the transducer on a table - this generated enough voltage to light the neon bulb, which requires at least 90 volts!

At the SRS meeting someone mentioned having once built a touch screen by mounting an LCD screen on three such transducers, and deriving the touched position from the voltages generated by the three transducers from the pressure of a touch. He said this requires amplifiers that can measure the voltage generated by the transducers without draining the voltage off, i.e., a very high impedance input.

At the last Weird Science meeting, someone gave me a bunch of circuit boards from smoke alarms - each of these should have an electrometer on it, which is just such a very high input impedance amplifier. I plan to try using these to make such a touch panel, or perhaps a touch dome on a robot.

Presentation 2

Gary Teachout - Fire fighting robot navigation techniques

LC uses a squirrel cage type hair drier and that it has a DC motor. The candle flame can be from six to nine inches off the floor so the extinguisher needs to cover this whole area. The extinguisher needs to blow hard enough to put the candle out without any doubt, you don't want succeed at navigating and finding the candle and then have it not go out!

Here is an outline or pseudocode of my procedural navigation technique:

Main Loop
Go
Turn left

Search room one
Turn left
Turn right
Search room two
Turn left
Go...

Loop forever...

Turtle command subroutines:
Go down hall "go(distance, follow left wall, stop at left turn)"
Follow wall
Go distance
Watch for edge of wall
Average out direction
Return to main loop

Turn some angle "turn(left 180)"
Left wheel half speed
Go distance
Return to main loop

If it hit's a wall?
Back away
Turn away
Correct distance
Continue on

Search room Each room has its own search procedure
Follow wall into room
If candle is seen
Put out candle, return home, stop
Pivot 180 away from wall
If candle is seen
Put out candle, return home, stop
Follow wall out of room
Return to main loop

Put out candle
Exit room
Return home

You can learn more about Gary and his creations on his website at
http://www.seanet.com/~garyteachout/. Also see the Encoder article about him at
(http://www.seattlerobotics.org/encoder/200011/garyt.html).

Presentation 3

Jim Wright - Fire Fighting Robots

First robot

Lego/Handy Board-based

I first used the clock to time distances, but soon found that the battery level influences the speed of the motor and though the CPU clock uses the same amount of clock cycles the motors may not move as fast as they did the last time I ran the building.

Added sonar to it to see distances, not good enough, my robot still ran into walls.

Sonar correction. I would get to points in the building and measure the distances between to 30 degree angles and find how much I needed to correct. This needed too much time and tuning, so I added break beam encoders.

Added break beam sensors for turning. However used visible red LEDs and had real trouble with it at Trinity in the Gymnasium with the Sodium Vapor lights.

Second/Third Robot

Second Robot was basic stamp based, I did not complete it.

Third was HC12 based

Both employed Hall Effect sensors/lack of interrupts. Hall effect sensors are magnet field sensing devices. Found that Radio Shack had very small round magnets. Cat No. 64-1895.

Both employed distance sensors perpendicular to the wall and adjusted the spacing to the wall as it ran the maze.

Did not have any ground sensors, so it followed the wall all the way around the building.

Fourth Robot

Between the third and Fourth robots I built several other smaller less complex robots to get good at robotics. I really should have done this first.

HC11 based

Used the Hamamatsu P5587s for the wheel encoders and the QRD1114 reflective IR sensors for the ground.

Used Larry Barello's method of setting the distance sensors at 45 deg angles and then feeding the distance into the motors. You keep one motor constant and vary the other depending on the wall distance.

Extinguishing methods

- Fans
- Compressed gases, found at office supply stores.
- Water
- Other

My first robot mixed a small tank of vinegar into a small tank of baking soda, and it frothed out a nozzle.

Afterwards

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

For those interested, there's lunch at Pegasus Pizza on Sunset Blvd after the meeting.

Directions from RTC:
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Aug 17

```
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
```

Sep 21

```
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

Oct 19

Introduction

The meeting started on time with a welcome and a few general announcements from SRS President Doug Kelley. Attendance was around 43 at 10:00AM and creeped up to 50 people total by 11:00.

General Announcements

Doug Kelley - Welcome. Small turnout of 43 at 10:00, creeped up to about 50 as the meeting progressed. Robothon (http://www.seattlerobotics.org/robothon) will be in the Seattle Center Centerhouse (http://www.vrseattle.com/html/vrlist.php?cat_id=134) on Oct 25-26, 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 will Robothon cover two full days. Robothon 2002 t-shirts are still available in medium size for $10, the other sizes for $20. See Pete Miles or contact him at events@seattlerobotics.org to obtain these.

The SRS Encoder (http://www.seattlerobotics.org/encoder) will be put on a regular publishing schedule that is currently being decided. This should make its appearance regular and predictable. The submission deadline will be two weeks prior to the next publication date.

Pete Miles is looking for volunteers for Robothon 2003. If you are interested, please contact him at events@seattlerobotics.org.
Pete has a new book out called *"Robot Sumo: The Official Guide"*. It is available at http://www.Amazon.com and http://www.BarnesNoble.com. This is a must-have book even if you aren't planning on building a robot. It is chocked full of great information, pictures of robots familiar to SRS members in Seattle and attendees of past Robothon events. He will obtain some copies from the publisher and offer them for sale at a future meeting. He has promised to sign them too. The Amazon.com link to Pete's book is:
http://www.amazon.com/exec/obidos/tg/detail/-/007222617X/qid=1036004763/seattleroboticss/

Pete Miles' and Tom Carroll's combat robot book:
http://www.amazon.com/exec/obidos/ASIN/0072194642/seattleroboticss/

Tom Dickens has an Encoder article that missed the current edition that is on his website. It should appear in a future issue of the Encoder.

Off of his 68HC11 web-site:

- http://tomdickens.com/68hc11/intro.html

The new article details the 68HC11 opcodes:

- http://tomdickens.com/68hc11/68hc11_opcode_map.html

556 Servo article in the current Encoder:

- http://www.seattlerobotics.org/encoder/200210/servoex/ServoExcerciser.htm

Similar article that he wrote a number of years ago detailing running a servo using a 556:

- http://tomdickens.com/68hc11/servo/servo.html

Show-N-Tell

Gary Teachout - Got a couple sample +/-10g accelerometers (ADXL210E) from Analog Devices and built a board to play around with them. They can stand +/-1000 g's of shock. Check http://www.analog.com/technology/mems/accelerometers/designTools/selectionGuides/products.html for a list of AD's MEMS accelerometer and gyroscopic products.

Chris O'Dowd - Robot snake, built with bi-cords. He also has a 5-motor snake that isn't working right now. The gearmotors came from Macintosh disk drives.

Monte Reed - North Seattle Robotics meets at North Seattle Community College (NSCC) 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.

Larry Barello - balancing robots, showed videos of balancing robots in action, built a "bed of nails" to test connectorless boards quickly. Test takes a few seconds instead of much longer. Built a 4-channel servo pulse generator, see writeup at http://www.barello.net/Papers for details. He also sells robot kits on his website at http://www.barello.net/Commerce/. The paper Larry referenced can be found at http://leiwww.epfl.ch/joe.

Ron Provine - http://www.wiredmag.com, article in Nov 2002 issue by Dr. Robert Full on leg design and balancing. See Ron if you are interested in school contests and related activites like FIRST (http://www.usfirst.org/) and BotBall (http://www.botball.org/).

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

Are you preparing for Robothon 2003?

Doug Kelley asked how many people are planning on building **brand new** robots for the next Robothon. About a dozen or so folks responded positively. It's a year out so there's lots of time to build one or more robots but don't wait too long to get started. Get busy now and by all means bring your in-progress works to meetings to show and solicit advice and of course ask questions on the listserver. There's usually plenty of advice to go around.

Presentation

Pete Miles - Making your own robot sumo wheels

Pete Miles presented information on and demonstrated the construction of various type of robot sumo wheels. He has experimented with a variety of materials and methods. His current experimentation uses liquid resins poured into custom-built molds. He demonstrated this construction approach some during the meeting. See his *Robot Sumo* book mentioned above for more details on his methods, materials, and techniques. The Amazon.com link to Pete's book is: http://www.amazon.com/exec/obidos/tg/detail/-/007222617X/qid=1036004763/seattleroboticss/. Purchasing his book through this link will contribute 5% of the price to the SRS with no additional cost to the purchaser.

Afterwards

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

For those interested, there's lunch at Pegasus Pizza on Sunset Blvd after the meeting.

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Nov 16

Introduction

Doug Kelley welcomed everyone on this blustery Saturday morning. 31 soggy folks showed up by 10AM. Another dozen came by 10:30 bringing the attendance up to about 45. A somewhat light turnout for our meetings but a good crowd for such a rainy (but perfect robot building) day.

General Announcements

Doug Kelley - Possible non-traditional ROBOTHON activities

- LEGO robot contest - Build it on Sat, run it on Sun.
- Large robot exhibition ("R2D2"-type robots).
- We might build autonomous one pound combat robot built by club members.
- We might have a "junkyard wars"-type contest - build something from a box of junk
- Formal paper presentations on robotic subjects could be done - Tom Dickens will organize this.
- Robot trials where robots have to do some task.

ROBOTHON 2003 (http://www.seattlerobotics.org/robothon) will be in the Seattle Center 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 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).

- Jan 1 - *Encoder* published (article submission deadline Wed Dec 18)
- Jan 18 - RM Sat 10AM at RTC
- 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)
- Jul 19 - RM Sat 10AM at RTC
- 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 24-26 - **ROBOTHON** at Seattle Center Centerhouse Fri-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

Doug Bell - Doug Bell - Was watching TechTV (http://www.techtv.com/techtv/index.html/) on cable recently and caught "Technogames" - Robotic competitions staged at the Millennium Dome in London. The show featured LEGO robots that accomplish tasks (shotput, walking races, climbing, etc.). Doug showed us a number of marvelous LEGO walkers that he created. He modeled them after machines he saw on TV and demonstrated a couple that actually worked for us.

Karl Lunt - House robot, using 68HC12 w/gnu compiler, wants robot to make noise/sound, looking for ASCII-to-speech synthesizer (festival), Irish whistle tunes are programmed into robot. Send an output via TC6 (5V TTL) connected to a PC speaker powered by your robot battery; use an attenuator on the TC6 output to limit voltage to 1V to match the speaker's line input. Capacitive coupling was also recommended to isolate grounds.

Doug Kelley - Doug Kelley recommended "Musical Applications of Microprocessors" as a great resource for learning how to use computers and microprocessors for musical applications. See http://www.ilovemusic.com/computer_music.htm. Doug also found a Bueller Surplus motor for his 3kg sumo robot. He looked far and wide for a right angle coupler and found something at "Small Parts, Inc. http://www.smallparts.com. He built his own gearboxes. See http://www.CandHsales.com.

A young fellow demonstrated a cool little robot that used a CMUcam (http://www-2.cs.cmu.edu/~cmucam/) to track objects and light sources without an external processor. The camera is aimed using RC servos and it was able to track a laser pointer spot on a nearby flat object.

Steve Kaehler - Several articles on robotics projects in some trade magazines (Design News & NASA Tech Briefs) were passed around.

Tom Dickens - Trying to develop tiny code for 68HC11 to generate pseudo-random code generator.

Neal Brody - Random number generators on the 68HC11 - See "Starting Forth" - uses multiply & add somehow.

Kensey Fobes - Wants to put a class together to teach MasterCAM + CNC to build robot parts. Contact him at KFobes@rtc.ctc.edu if you're interested.

Larry Richter (425-204-3266, LRichter@renton.wednet.edu) and **Geof Newing** (425-204-3298, GNewing@renton.wednet.edu) - Charles Lindberg High School - wants to open shop to students & parents. CNC mill, foundry (Aluminum, cast iron, etc.), sheetmetal benders, lathes, woodshop. 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:

- Dec 4
- Jan 8
- 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.

Larry Barello - Still playing with balancing robots, brought some demos. His RC tank machine has a gyroscope installed. It tracks straight but is hard to steer. See his website at http://www.barello.net/index.htm more information. He also sells robot kits on his website at http://www.barello.net/Commerce/.

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

Feature Presentation

Chris Mason & Quoc Pham from Evolution Robotics - http://www.evolution.com

Product: Evolution Robotics ER1

Chris Manson - Sales Dev Manager - 626-535-2794 - chris@evolution.com

Quoc Pham - Lead S/W engineer - 626-535-2750 - quoc@evolution.com

Chris demonstrated this crowd-pleasing product at ROBOTHON 2002. This is a cool robot kit that can be configured any way the user desires. It is designed as a hobby robot system that lets people make the robot do whatever they can imagine. The kit provides the basic mechanical, electrical, and software engineering in a moderately priced off-the-shelf product so that users can concentrate on making the robot do interesting things instead of building them (not that building robots isn't fun and interesting). The robot can be taught to recognize objects it sees, speak, make & recognize sounds, and monitor sensors & activate things via its auxiliary I/O ports. The limits are few, the possibilities, endless.

The Robot Control Module (RCM) plugs into your laptop's USB port and executes commands from the software running on it. The USB camera takes another port but with a port expander, a second camera can be added. A USB IR sensor cluster will be available soon for nearby object proximity detection. The S/W runs on both Windows & Linux. Auxiliary analog and digital I/O

ports are also available on the RCM for custom user interface applications. Windows is supported primarily for greater market appeal. X10 (http://www.x10.com) interface is fairly simple & straight forward permitting home automation control by the robot. Karl Lunt has done some work in this area. See his website at http://www.seanet.com/~karllunt/ for more info. The ER1 runs $599 (not including the laptop). The gripper arm will run $200. Members of the SRS who buy an ER1-A or ER1-K before Dec 31, 2002 can receive $50 off the above price on the robot itself. Go to http://www.evolution.com and use promotion code **RS11S2**.

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.

This file is archived on Yahoo Groups at http://groups.yahoo.com/group/SeattleRobotics/files/Monthly%20Meeting%20Minutes/.

Submitted by Steven Kaehler, SRS Secretary, secretary@seattlerobotics.org

Dec 21

```
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SDK