

2-9-08 RSSC Notes:

Class:

Jim Ubersetzig: "Creative Robot Design"

Fingers and arms are essential functional parts of robot.

Robot hands must sense objects

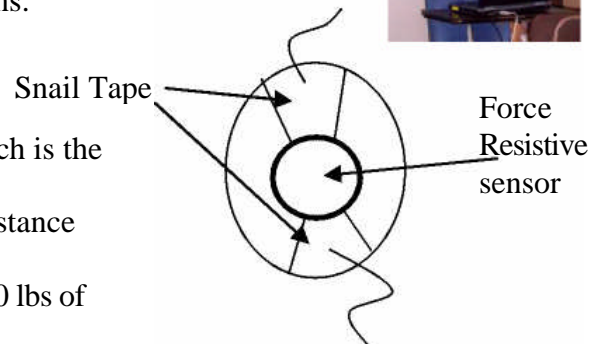
Jim discussed different types of objects that might expect to be manipulated. He shared the different sonar and IR sensor solutions.

A touch sensor can be made using Snail repellent(copper conductive) tape: Two pieces of conductive tape provide contacts for resistive touch sensor:

There are a variety of resistive touch sensors available. One of which is the [flexiforce sensor](#)

Additionally Jim showed details of small sensors that changed resistance with force applied.

Jim showed some [linear actuators](#) with about 1 inch of travel and 10 lbs of force from All Electronics for \$5.5



Business Meeting:

March Class:

PCB manufacturing Mason. How to make a PCB at home using Press and Peel film.

Demonstration of steps including PCB layout, preparation of film, hot transfer, etching and board population.

Discussion of Contests: Jim announced that the contest should require the use of three fingered hand. Several contest ideas were discussed including:

Open an aluminum can with one hand.

Pick Up objects off floor and put in Bin. 8oz

Mixing Drinks unscrew Bottle tops. Mix Drinks.

Pick up the receiver and dial

Measure objects shape by touch only.

Dangling Power cord contest, wherein a robot would find a cord, feel along it to find the plug and then plug the cord in the wall.

After substantial discussion, it was voted that the Pick up objects off the floor and put in Bin would be the contest for June.

Saturday morning session: 9am Walter Martinez will tentatively bring some lego robotics kits and Mason will bring some students interested in robotics. Need to confirm with Walter that he will be there. Other club members are encouraged to come and work with young students and bring lego parts.

4th Saturday meeting: Jim would like to see more construction and construction techniques at the 4th meetings. There are some tools available.

Jim suggested a Tool use workshop. How to solder. There was interest in how to solder QFPs. Mt. Sac has a six week workshop on [advanced surface mount assembly](#) available through community Ed for \$5. (ELEC 61 is the fabrication course which takes folks through design and fabrication of a complex project(A theramin last semester) ELEC 62 is the Advanced Surface Mount Assembly course which covers QFPs.) Additional courses in CNC machining, Solidworks, inventor and rapid prototyping are [available](#).

Jim donated some tools for the 4th Saturday. (soldering iron and solder)

Sumo Robot Contest: (Pictures by Ken!)

10 robots entered the Sumo robot contest. After many rounds of high excitement, the victors were crowned:

1. Gravedigger byjohn (3 time champion!)
2. Germbot by German monroy (2 time 2nd place!)
3. Joshbot by Josh. (First time robot builder!)

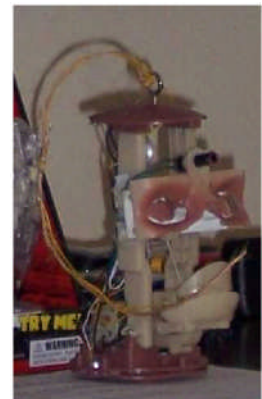


(Battle for 2nd and

third place, joshbot left vs. Germbot right

Show and Tell:

- [Tin Man Robotics](#) is closing 25% discounts for the next two weeks.
- Jan Borchers prototyping platforms: [Arduino](#) platform. Open source. [Lilly pad sensors](#). Small wearable sensors. Arduino uses a Freeware programming environment that is C based.
- BG Micro has [SICK Proximity Sensor](#) for \$10. These are cool check the link!
- Mason presented Pan/Tilt camera, [Arduino on a Breadboard](#) and [WiiMOTE](#).
- Steve Vorres announced that [Tech Shop](#) will open in North San Diego County. The SDRS will meet in that space. 30,000 square foot space with machine tools and classes.
- [Thomas Messerschmidt LEAF](#) is an open source robotics platform. Leaf Question and Answer text files. Allows users to program responses to recognized questions for a Leaf Robot. (LEAFChat not to be confused with the IRC client) Interfacing B9 voice to Leaf. Tom has written software to play B9 Mp3 files from the Leaf software.
- Don Fears MINBOT handout. Minbot has a variety of features \$22. He is a 20s message recorder with an animatronic face. From a Halloween store. [Voice recognition chip](#)



- Steven Gentner. Using [roboreal](#) for robot positioning based on reckoning relative to a projected image. An asymmetric image is required. A “cap” for a laser point that projects an asymmetrical arrow gives the desired image. However the image is not sufficiently bright to be picked out from background. Three laser pointers can be arranged in a non-equilateral triangle. A camera is pointed at the ceiling and recognizes the three laser points against the ceiling. Thresholding and blob filtering picks the points of light out clearly. A new triangle tool connects the dots and the orientation of that triangle corresponds to the orientation of the robot (duplicate a compass) Do navigation by looking at the pixel distance between current position and desired position. Development is in progress.