Wireless Networks for Multi-Robot Communications Team
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Biweekly Report 2

Current Progress

We have built three robots so far. Two of these robots have the antennas mounted on the side and can communicate with each other. We have discovered the receiver and transmitter chips must be placed a certain distance apart from each other or they will interfere with each other and they will not be able to receive or transmit anything. Most of the code for communication is written and working. We have the mounts built for the antenna on the third robot but only have one antenna for it. We therefore have not yet been able to test three way robot communications.

It also now appears that finding distance between the boebots through RF is not feasible. The reason RF range finding is unfeasible is because we are unable to send a continuous signal. We are only able to send short pulses. If we had been able to send a continuous signal, then we could have determined the distance by the time it took the capacitor to charge.

On one robot we have the infrared sensors attached and have the collision avoidance software written and working. On another we have the photoresistors attached and have the code written to search for light. The light searching code still needs some tuning to search for light as well as we want. Currently the boebots' movements towards the light are not as smooth and steady as we would like.

Current Objectives

We are working to find methods of placing both the receiver and transmitter chips on the boebot with minimum difficulty. Two possible solutions are to cover the chips in foam or to mount a separate breadboard above the boebot or behind the boebot. As stated above we need to get more antennas for the boebots and to test three way communication.

Since RF range finding is unfeasible, we will have to use one of the other methods for getting all the robots to know where one of the robots is. The possible ways to do this include dead reckoning and lighting up many LEDs. The difficulties with dead reckoning are that not all the servos will send the robot the same distance and the distance changes as battery life decreases. The difficulties with LEDs is this will interfere with the infrared sensors and the range of the LEDs is limited. If we combine dead reckoning with LEDs and light searching at the end we should be able to compensate for these problems.

The light searching code needs to make the boebot move a distance proportional to the amount of light being received instead of moving and then checking the value of the photoresistors.