Shampoo and Condition Identification Device

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Week 2 Report
1-28-08 through 2-1-08

Work Completed:

Week two was dedicated to familiarizing ourselves with the circuitry for this device. It is impossible to know exactly what microchip is being used for this setup because of the black epoxy. However, the test points can still be verified because all components are labeled and leads are available. Upon testing of the device the .25 W speaker that is supplied with the voice output system seems to be adequate for people without hearing impairment. However our concern is that the client will not be able to hear the device over the noise in the shower. It was decided that an amplification system would be necessary in order to increase the output volume. A system using an LN386 audio amplifier was constructed however it seemed to drown out the signal and saturate it. The resulting output was less audible than the original. Below is a circuit diagram of the amplification setup.

![Amplifier Circuit Diagram](DS006678-3)

**Figure 1: Amplification Circuit**
Future work:

- Find a setup for the proper gain on the amplifier.
- Construct a belt to house buttons and hold onto the bottle.
- Ensure that the speaker we currently have is sufficient to provide the volume needed.
- Find alternative speakers for the device.
- Guarantee that there is sufficient power from the batteries.

Project Review:
The team is moving quickly to complete this project. The basic components are all functional and the only real requirement is fine tuning the device for the client’s specific needs. The goals set for the up coming weeks are reasonable and should be completed in an efficient manner.

Hours worked: 5
Work Completed:

Week two was dedicated to finding the correct materials for this project and also locating motors that would rotate the entire setup. In order to ensure that we would be using proper materials the group consulted with the university machine shop. Serge and Rich suggested the use of aluminum square tubing for the entire project. This would not only ensure that the proper rigidity was given to the system, but also that whole system was light. Limb 1 will be made of round tubing because this will allow us to the crossover clamp to secure our system to the backpack.

The second thing that we did this week was to finalize our decision on the motors that will be used. The main issue was that we weren't sure which type of motor, stepper or server would be best for our project. However, after consultation with other groups we decided that the simplest method for us would be to use servo motors. This motor will be controller by the Pic Microcontroller to move to desired angled. The advantage of servos is that the move to an absolute angle and they are controlled by PWM (Pulse Width Modulation). The two motors that were ordered were the SPG985 Power Servo and the SPG785. The pictures below are of the servo motors ordered.

Figure 1: Servo motor with attachment.
Future Work:

- Connect motors to device.
- Find raw stock to cut to desired lengths.
- Order crossover clamps.
- Test hinges for proper functionality.
- Device an attachment for the backpack to limb 3.
- Familiarize ourselves with the PIC microcontroller and compiler.

Project Review:

As soon as the remaining components are received the team should be moving well to finish the project. The main concern for the team is to create a code that will control the motors in the proper sequence. This can be done without actually receiving the motors so we should be able to have significant progress by next week.

Hours worked: 9