Using Technology to Measure Adherence of Complicated Medication Regimens

Progress Report 11

Client
Timothy Juergens, M.D.
UW/VA Hospitals
Geriatric psychiatrist/sleep specialist
Phone: 239-3030
timothy.juergens@med.va.gov

Advisor
Professor William L. Murphy Ph.D  wlmurphy@wisc.edu

Team Members
Sujan Bhaheetharan  Communications  sbhaheethara@wisc.edu
Cara Dunn  BSAC  cddunn@wisc.edu
Farshad Fahimi  BWIG  ffahimi@wisc.edu
Nipun Yamdagni  Leader  nyamdagni@wisc.edu

Problem Statement
According to a recent study, almost 75% of patients, especially the elderly, do not adhere to their medication regimens for various reasons. This lack of adherence can prevent a patient’s recovery. Additionally, the present state of affairs is such that if a patient reports no improvement, a physician does not definitively know whether to try a different medication or whether the patient is simply not taking the medication regularly. To improve general health of patients assigned complicated medication regimens, we are to make a device that keeps a record of when a patient takes their medication.

Project Schedule/Important Dates
March 9th  Midsemester Presentation
May 4th  Poster Presentation
May 9th  Final Papers Due

Summary of Team Accomplishments
• Finished mid semester presentations
• Created computer interface
• Found prospective solutions for wiring all the switching
• Found a way to access time from the watch chip
• Found a way to get the microcontroller to sleep, and wake up from sleep using interrupts
• Were able to store time of when a button was pushed
• Completed outreach requirement
• Researched methods to wire the pill box to the circuit
• Researched methods to use the visual basic to interact with the microcontroller
Current Difficulties
- Once again the bootloader needed to be reinstalled. However, this David Markovitch found that there was an error in our bootloader, and was able to repair the fault.

Activities

Sujan
Communications                  0.5 hr
Total: 0.5 hrs

Cara
Group Meeting                   1 hr
Pill Box Holes                   1.5 hr
BSAC                           0.75 hr
Total: 3.25 hrs

Farshad
Meeting with David              1 hr
Group Meeting                   1 hr
PCB Express                     2 hrs
Radio Shack                    0.75 hr
Total: 4.75 hrs

Nipun
Meeting With David              1 hr
Group Meeting                   1 hr
Visual Basic Research           0.5 hrs
Searching Digikey               0.5 hrs
Radio Shack                    0.75
Progress report                 0.25 hr
Total: 4 hrs

Team Total Hours for this Week: 16.25 hrs
Cumulative Team Hours this semester: 199.75 hrs
Cumulative Team Hours to Date: 645 hrs

Expenses
- Microcontroller (PIC18F4685-I/P-ND) $027.44
- Watch chip (DS1307) $017.58
- USB to serial (TTL) interface (DLP-USB232M) $031.47
- Plexiglas $004.21
- Microcontroller (PIC18F4550) $030.50
- Pill box $004.16
- Wires $006.32
Total: $122.68