Ubiquitous Computing, Fall 10

Assignment 2: Open Ubcimp Project

Introduction
Ubiquitous Computing refers to the trend where we as humans interact no longer with one computer at a time, but rather with a dynamic set of small networked computers, often invisible and embodied in everyday objects in the environment. Such ubiquitous computers are paving the road towards a smart world in which computational intelligence is distributed throughout the physical environment to enable new breeds of applications and systems. By embedding digital intelligence in everyday objects, our work places, our homes and even on the clothes that we wear; many of our everyday tasks and processes could be simplified, made more efficient, safer and more enjoyable. Ubiquitous computing is an emerging research field that covers many disciplines.

Open Ubcimp Project
The goal of this project work is to identify one/two research topics within the emerging research field of ubiquitous computing and develop a prototype that addresses some of its major issues. Brainstorming can be an effective way to begin with to generate lots of ideas and to determine the idea(s) that are useful in coming up to a reasonable specification for the open ubicomp project. Each group should discuss issues like the utility of the project, its potential impact, novelty of the approach, related work in the domain, potential open issues that are interesting to solve, challenges to address, potential usage scenario(s), component and material requirements, functionalities to include, evaluation approaches, etc. The groups should submit a specification based on the brainstorming sessions on the 6th of December 2010 before 23:59 hours through email to the course leader (dipak@cs.umu.se). Your group should first get an approval for your open ubicomp project (will be evaluated based on the project specification submitted) before you can start with your project prototype implementation. If your proposal is rejected or needs to be further worked out, do that first before starting with the prototype implementation. If you need additional materials, contact the course leader. For this assignment you will have access to Phidget components, but since we only have a limited number of some of the Phidget components, keep in close connection with other groups to share the Phidget components. The amount of work that you will put into this project is equivalent to 3 ECTS/ 2 Swedish Credits.
Project Specification
Your specification should contain:
   a) Introduction to your project
   b) Goals of your project
   c) Novelty and expected impact
   d) Literature survey on related works and application areas
   e) Conceptual design with necessary diagrams (including scenarios)
   f) How the design will be implemented
   g) Major issues and challenges that will be addressed
   h) A shopping list of items required for your project

Scenario(s)
All groups should come up with a good scenario or a set of scenarios that describe the design and working of your project. Note that solutions without proper usage scenario will not be accepted.

Demo
The groups should show a demo of their open ubicomp project on the 17th of December 2010 between 13:15 and 17:00 hours in the Ubicomp lab (MC333). The groups should first describe their system and then show a demo by enacting the usage scenarios. The demo will be evaluated by considering the following aspects:
   a) Novelty of your concept or application
   b) Related work discussions
   c) Physical construction of your system
   d) Implementation and working of your system
   e) Proper addressing of the challenges and issues within your research topic
Note that for a group to pass this assignment, the group should pass in all the five aspects.

Webpage
Your work should be documented as a webpage such that it enables the viewer to understand the what, why and how of your project. The webpage should contain the following:
   a) An introduction to your project
   b) Goals of your project
   c) Literature survey on related works and application areas
   d) Conceptual design with necessary diagrams (including scenarios)
   e) Physical construction of your prototype with photos.
   f) A 4 mins video describing your project
   g) Implementation details
   h) Current issues within ubicomp and how this project has tried to solve a few of those issues.
   i) Expected impact (it could be to the society, to the research community, etc.)
   j) Conclusions
The webpage should be hosted before the 20th of December 2010, 23:59 hours. One suggestion is to work with both the system development and the webpage development in parallel to avoid last minute hiccups.