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 Ubicomp 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

Brainstorming can be an effective way to generate lot of ideas and solutions that are “outside of the box” for designing and building creative prototypes. Each group should discuss the utility of their project, its potential impact, novelty of the approach, related work in the domain, open challenges to address, user needs, usage scenarios, conceptual design, Phidget components (also other components), building material and other requirements. The groups should submit a specification based on the brainstorming session by the 6th of December 2012 (Thursday) before 23:59 hours through email to the course leader (dipak@cs.umu.se). The specification should be between 1 and 2 pages.

Basic building material and Phidget components will be provided in the UBICOMP Lab. Additional Phidget components and building materials that are required for this assignment should be specified in the document to be submitted on the 6th December 2012. Since we only have a limited number of Phidget components, you might have to share some of the components with other groups. Contact the course leader in case you are in trouble.
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

Project Proposal Presentation

The groups should present their project ideas for a joint brainstorming session on the 7th December 2012 in MA176 at 13:15. After further discussions, the groups can start with their prototype development.

Scenario(s)

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

Demo

The groups should show a demo of their Open Ubicomp Project on the 18th of December 2012 between 10:15 and 15:00 hours in the UBICOMP Lab (MC333). The groups should first describe their work and then show a demo with persons enacting the usage scenarios. The demo will be evaluated by considering the following aspects:

- Novelty of your concept or application.
- Related work discussions
- Physical construction of your system.
- Implementation and working of your system.
- Proper addressing of the ubicomp design challenges.

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:

- An introduction to your project.
- Goals of your project.
- Literature survey on related works and application areas.
- Conceptual design with necessary diagrams that explain your concept clearly.
- Implementation details including for instance specific sensor thresholds used, etc.
- Photos of your prototype.
- A video for 3 to 4 minutes describing your system and how your system works for the relevant scenario(s).
- A discussion part where you discuss your solution with reference to issues within ubiquitous computing.
- Expected impact (it could be to the society, to the research community, etc.)
- Conclusions

The webpage should be hosted before the 19th of December 2012, 23:59 hours. One suggestion is to work with both the system development and the webpage development in parallel to avoid last minute hiccups.

Additional Information

Information about the Phidget components and useful documentation can be found at the Phidget website. [http://www.phidgets.com](http://www.phidgets.com)