Assignments 4 – System Architecture

Viktoria Pammer-Schindler
March 23, 2015
# Days and Topics

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 11</td>
<td>Intro</td>
</tr>
<tr>
<td>March 16</td>
<td>Designing Interactive Systems – Assignment 1 Published in Detail</td>
</tr>
<tr>
<td>March 23</td>
<td>Prototyping + Evaluating Interactive Systems</td>
</tr>
<tr>
<td></td>
<td>- Paper Presentation and Discussion (Assignment 1)</td>
</tr>
<tr>
<td></td>
<td>- Assignments 2-4 Published in Detail</td>
</tr>
<tr>
<td></td>
<td>- Android Sensing Tutorial Day will be Announced!</td>
</tr>
<tr>
<td>April 20</td>
<td>Presentation Assignment 2/3</td>
</tr>
<tr>
<td>April 27</td>
<td>Presentation Assignment 2/3</td>
</tr>
<tr>
<td></td>
<td>- Submission Assignment 4</td>
</tr>
<tr>
<td>May 4</td>
<td>User Interfaces for Ubiquitous Computing</td>
</tr>
<tr>
<td></td>
<td>- Assignment 5 Published in Detail</td>
</tr>
<tr>
<td>May 11</td>
<td>Context-Aware Computing</td>
</tr>
<tr>
<td></td>
<td>- Details on Final Paper</td>
</tr>
<tr>
<td>May 18</td>
<td>Presentation Assignment 5</td>
</tr>
<tr>
<td>June 1</td>
<td>Presentation Assignment 5</td>
</tr>
<tr>
<td>June 8</td>
<td>Submission Final Paper</td>
</tr>
</tbody>
</table>
General Idea

Describe System Architecture of Complete System

- Use UML diagrams to illustrate the system architecture
- Make notes about what kind of capabilities you need in which pieces of your system
- This assignment should help you to prepare for assignment 5 (implementation of one sensor-based feature of your system)
Learning Goals

- **Plan Implementation:** You should practice thinking about implementing a complete ubicomp system.
  
  - Are components physically separated?
  - Are multiple devices necessary?
  - Which sensors do you need to gather which sensory data?
  - What kind of data postprocessing do you need? Do you think this will be carried out on the mobile device or do you need a more powerful computer for this?
  - Communication between components?
Learning Goal

– **Practice UML**: Select meaningful diagrams and representations.
  
  • The goal is not to have a very detailed system architecture, but a meaningful one. Remember that in the next assignment you will implement only a relevant part of the complete system, so this architecture will be your last “implementation” towards the “complete” system (which is an approximation of the system in the original paper)
Grading

– Are components, classes, actions (whatever you describe in the architecture meaningfully labelled?)

– Is the system completely described?

– Notation – does the notation roughly conform to a UML standard (if I understand it, it is fine – if in doubt, it counts if it is UML)
Example Architecture

Memento – a system for keeping a physical diary and an online diary (a website) synchronised.

Storyboard (vision):
• User looks at real diary page through camera
• If the page already exists, user is informed about comments made online to this page
• If not, the user can take a photo and upload it to website with a single touch

Components: A client for smartphones, and a server that stores and publishes the websites.
Component Diagram

Client

PhotoManagement
- LookAtContentThroughCamera (for starting the camera)
- TakeAPhoto (for taking a photo)
- Display digital content (for overlaying camera image with digital content, or the message “Please upload page, it does not exist yet online”)

Network
- Upload (for uploading photos – also needed to verify if photo exists online already; image analysis is carried out at server)
- Synchronise (for informing the user about comments made online, and for notifications)
V. Pammer-Schindler  
March 23, 2015  
Sensors and User Models @TUG, Assignment 2+3
Component Diagram

Server

ContentManager
- `createDiaryPage` (for creating a new diaryPage)
- `getDigitalContentForPage` (for checking whether a particular image represents content that already exists on the server, and answering with digital content if yes – here, image analysis needs to take place at the server)

EventSystem
- `Notify` (*notify user about online activity*)
- `Share` (*for giving or taking away access rights to a particular diary – server needs to manage users and their rights*)
Submission

Until April 27, exactly midnight, via email to viktoria.pammer@tugraz.at
Send one file in attachment (PDF)
Contains system architecture (approx. 2 pages)