

CS 4470/6456

Name: \_\_\_\_\_

Fall 2004

Email: \_\_\_\_\_

**Final Exam**  
December 7, 2004

**Instructions**

You have until the end of class to complete this exam.

This is a closed-book exam. Points are shown [ in brackets ], for a total of 62 points.

---

**1. Short Answer [8]**

a) What is semantic zooming and why is it useful?

b) What are phidgets and how are they similar to widgets?

c) What is a tuple space, and why would you use one?

d) Describe how users' left and right hands work differently.

Name: \_\_\_\_\_

## 2. Sensors

a) False positives and false negatives often cause problems for sensor-driven applications. Give an example of a usage scenario involving sensors. Explain how false positives and false negatives would affect that usage scenario. [6]

b) Explain what sensor fusion is, why you might want to use it, and how it might affect the usage scenario you described for part (a). [4]

Name: \_\_\_\_\_

### 3. Context

a) Explain what context is and how it is relevant to UI software. [2]

b) Describe one of the software architectures we discussed in class for managing context information (you might find providing a simple diagram helpful). Be sure to discuss how information flows from the sensors to the applications. List one advantage and one disadvantage of that architecture. [8]

Name: \_\_\_\_\_

4. **Device Privacy.** One of the themes in this course has been information privacy, in particular how to manage sensitive information when working with trusted and untrusted devices. Choose either the Personal Server project, the Opportunistic Annexing project, or the Stanford Information Workspaces project and describe how it manages information privacy, whether it does a good job or a bad job, and why. [6]

5. **Software Architectures.** Compare and contrast the PEBBLES architecture with the framework you built for your homework. Describe how each supports multi-machine user interfaces, and list one advantage and one disadvantage for each approach. [8]

Name: \_\_\_\_\_

**6. Paper.**

a) We described two hybrid paper-electronic systems in class. Choose one, describe it, and give one advantage and one disadvantage of it relative to a pure paper approach and a pure electronic approach. [5]

b) Hybrid paper-electronic systems are still primarily research prototypes. Provide an argument for why commercial hybrids are still rare, whether or not you think they will become more prevalent, and why. [5]

Name: \_\_\_\_\_

**7. Model-based UIs.**

a) Model-based UIs were a popular research topic in the late 80s and early 90s. Briefly describe what model-based UIs are and provide one advantage and one disadvantage of them. [5]

b) For a number of years research on model-based UIs stopped, but recently interest has risen again. Provide an argument for why model-based research is popular again, and discuss whether or not (and why) you believe they will remain popular. [5]