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### **week 3 :: context-aware**

A survey of Context-aware Mobile Computing Research by Chen & Kotz

Context-aware computing applications by Want et al

Especially working among students who are using the sensor-laden house\_n placelab for activity recognition and just-in-time information, I am particularly wary of systems which, however adaptable, are still essentially rule-based and vulnerable to unreliability in unpredictable situations. Instead of developing increasingly complex and robust algorithms to interpret high-level human context through low-level indicators (i.e. "she's eating breakfast" from "within an hour of leaving bed, sensors indicate bowl, spoon, milk, and cereal box have all been touched within the span of 5 minutes"), I think real-time displays of low-level, invisible information can be a lot more useful and much more reliable. For instance, a wearable tool that measures UV radiation and warns the wearer if she is prone to sunburn or melanoma. Mere knowledge of data to the user, even without suggestions or automated tasks, is very powerful. Other examples are energy / water / resource consumption, time stamps / graphed duration of location or disposition, or overlaying a language translation of labels on objects. One thing I wish were invented is a tool that would directly map whatever I eat to my vital statistics (blood sugar, blood pressure) and stress/mood/energy levels (so I could have the knowledge and control to time my meals to optimize my alertness throughout the day, for example). Maybe someone else would want the same tool to tell them that warm honey milk is the best thing to make them sleepy at night.

How much does user-controlled data (directly-input profile, interests, personal details) versus automated data capture (recording trends, following a user's dynamic preferences) influence the system? If they contradict, should the system bias itself a certain way? I can think of times when the user's initial profile would want to dominate, and other's when someone doesn't know themselves very well and puts trust into the system.

Thinking about what humans are good at versus what computers are good at, I reviewed some ways in which humans retrieve our own data through contextual cues. We strongly associate memories with smell, which is a truly biological phenomenon. It might be a silly invention, but instead of a handheld alarm or an augmented display, perhaps the smell of coffee reminds you to remember the keys, or a particular smell is released on the days when you have lab meetings. Taste might even be a trigger, too. Only a subtle sample would be effective; however, such a multifaceted sensory simulator (and nonobtrusive installation and deployment!) might be a long ways off. However, it might be a useful complementary system to our overloaded visual + hand manipulation systems.