Assignment #1: Design Revisited

EECS 498, Social Computing Systems

Overview

In this assignment, you will complete an extension of the medical process design task we started in class. To help get started, you will be given more insight into the problems in this space from an excerpt from a book. This is an individual assignment, unlike it was in class.

Introduction

In our in-class activity earlier this semester, we designed solutions to the problem of accidentally mis-medicating, or over medicating, a patient in a hospital. This let us get a (quick) sense of how the design process worked, and how different solutions may or may not help in a real setting. While we only had feedback from imaginary ‘end users’ of the system, the class collectively helped flesh out many of the details about how hospitals address medication safety in practice.

However, despite real hospitals implementing a version of almost every idea we suggested (i.e., electronic medical records, barcodes on patients and medications, medicine dispensing robots who never miscount, extensive training, and more), there are still mistakes made. In fact, this recent Medium article details one case where a patient received 39.5 times the correct dosage of a medication, with serious consequences:

https://medium.com/backchannel/how-technology-led-a-hospital-to-give-a-patient-38-times-his-dosage-ded7b3688558#.8us8xwhaw

“How could this happen?!” you may wonder. Good question. Let’s find out.

Assignment

The article discusses, in great detail, some of the processes and factors that make this such a hard problem. From false positives to alert-overload, each of these factors limits some solution to this problem. The question remaining is: what’s left?
Part 1: Identify the Problems

For the first of this assignment, read the article and provide a break-down a set of ten solutions to the problem focused on. These can be from what we discussed in class, what was in the article, or one you devise. Describe in detail (a few sentences each) why these solutions fail in practice given what you know from the article.

Part 2: Where the Problem Fits

Answer the following two questions (~1 paragraph each):

1) Why is this a Social Computing problem? Explain what aspects are, and why they are.
2) What other aspects are not Social Computing problems, but are still Human-Computer Interaction (HCI) problems more generally? Explain why.

Part 3: Finding Future Solutions

Now that we know why a range of ideas don’t work, let’s see what would be required to fix them. Do any of the ideas not clearly fail, even with existing technology? Why? Why would such a system not currently be implemented?

Now, what if you could introduce a not-yet-existing technology in part of this process (as an example, the article mentions better AI for understanding when to fire an alert) — what solutions would work if this technology existed? Name at least 5 examples and how they would make a solution that doesn’t work today, work when they are introduced. Please try to avoid things that are likely impossible or more than 100 years away (e.g., anti-gravity / teleporters / etc.).

For two of the newly-possible solutions you discuss, expand on how you could prototype them, and get user feedback to inform the final design of a working system? This is essentially the same type of task we did in class, but now given new assumptions about what is possible.

Grading

This is an individual assignment. Please do not share responses or ideas with other students. I’d like to get a sense of your own thoughts on problems and solutions in this space — we’ll do a group assignment later to have a chance to work with others.

Parts 1 and 2 will be worth 30% of the grade each, and Part 3 will be worth the remaining 40% of the grade. This counts as part of the ‘Assignment/Milestones’ category.