Basic
Interaction Design
05-650

M / W 1:30 – 4:30 pm
GHC 4301

T / Th 9:00 – 12:00 am
GHC 4301

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## A4: Activating Objects

Working in teams, students will explore opportunities and design challenges around the design of novel interactive physical artifacts that support a need across one of the following users:

- children with parents
- pets with owners
- plants with gardeners

Groups will be responsible for researching the needs of the group they select. Examples include [children: potty training, sleep training, brushing teeth, eliminating monster fears, etc] [pets: training to walk on a leash, keeping pets of the furniture, etc].

Groups will develop their designs solutions as novel physical interactive objects (i.e. not computers, mobile phones, etc). Such designs must be reflective of the context and will likely embody novel sensing and actuation.

Groups will choose a specific context/setting/user(s) in the real world for the design of their interactive object, perform in situ research observations, assess needs, and design an interactive solution detailing elements of form, shape, size, design, affordance, interaction style(s) (pointing, touching, shaking, squeezing, gesturing, etc), as well as a selection of sensors to drive the interactive experience.

The challenge will be to support needs specific to the users with the object.

The major design constrains are outlined below:

Context. You must choose a context of usage where the interaction with your object will take place. This should be a real context where you can perform direct observations and interviews to assess user needs. [children: playground, bedroom, bathroom, etc] [pets: park, car, living room, etc].

Interaction. Based on the needs your team discovers, you will detail and design a novel physical object to introduce into the context to help solve the needs. You will be giving form to this object. You will not need to make this object fully functional. However, you will be required to demonstrate a concept of its functionality via a video and present an actual scale model of the object in class.

Sensors. Your interactive object is situated within a dynamic environment and your solution should integrate sensing to address this condition. These sensors can be real/simple (light, temperature, moisture, sound level, etc) or imagined/complex (cry sensor, anxiety, facial recognition, age, etc). The sensor(s) chosen must drive the final design solution in some way.

Users. Your users are the people that will interact with the object. This may include children, pets, parents, dogs, cats, siblings, etc.

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Teams will follow a user-centered design process that includes:

• Teams select a target user group and context. In selecting a target set of users and an application area, teams are encouraged to find a very narrow application range and to focus on a user group they have easy access to. You will need to access your target for research, validation, and most likely your video sketch.

• Teams are free to develop their own strategy for conducting user research on their target audience. They should have a variety of methods in hand, and they should construct a plan based on the information and insights they need to complete the project on time. The groups must conduct at least two of the user research studies in situ with their users – (1) activity observation and (2) user interviews.

• Teams will distill a set of functional, social, emotional, and aesthetic needs based on their user research ("I wish / I want"). They will then engage in ideation, generating multiple concepts that articulate a preferred state. This will result in a small set of concepts (20) that capture these needs. Next, students will reflect on the needs encapsulated in the design brainstorm and the needs generated from user research. The goal is to identify the most critical needs and the issues surrounding these needs.

• Teams will conduct a concept validation session, where they show their concepts to perspective users and then engage them in a discussion around the specific needs. The goal is to find the overlap between the observed needs the team has identified and the needs users perceive in themselves.

• Teams will generate a video sketch consisting of a few vignettes that document how the interactive physical object improves the quality of people's lives within the chosen context. This video will be at most 2 minutes.

• Teams will produce a web process document that details your design process, research methods and findings, insights, final design solution, and rationale for this solution.

Other design considerations:

• Saving time and/or labor: Do people gain value from doing less or saving time? Does saving time mean they will try to do more, or that they will feel better about themselves for getting something done?

• Self-reflection: Can your solution impact the quality of someone's life by helping them reflect on the actions they take? Or does providing detailed information about someone's action instead make them more self-conscious and neurotic?

• Acquisition of Skill: Do people desire to acquire a skill or do they just want to complete a task? Spelling checkers are designed to help people produce error free documents instead of helping them to become better spellers. What are the meanings and values connected between the activity & the skills people desire?

• Proactivity/Anticipation: Should the system proactively reach out to the user? What actions does it take to interrupt and to anticipate needs?

• Change in Needs Over Time: Should systems adapt as people use them over time? For example, those who ride a bus route daily need to only know how many minutes late the bus might be. New riders will need to know the route times and locations.

• Social Agency: What level of knowledge should the interactive object have with respect to the social interactions in the given context? The interactive object may know more about people and their activities than they wish to reveal to others. Should this social norm be expected or exposed to improve a users' experience using the system?

Grading Criteria

Process

• Did the team follow a rigorous design process and demonstrate how that process informs their final designs?

• Did the team select an interesting context, target user group, and application space for their design?

• Did they do a good job of integrating the theories from the readings?

• Did they carefully consider the listed design considerations and adhere to the given constraints?

Solution

• Is it believable that the target users' lives would be significantly improved through the addition of the groups proposed solution?

• Does the proposed solution take an appropriate form and provide appropriate feedforward and feedback?

• Does the proposed solution fit within the context?

Craft

• Visual appeal of interim research artifacts and presentations

• Visual appeal of final presentation

• Production quality of the video sketch

• Visual appeal of process materials

Presentation

• Motivation for design

• Communication of the concept

• Big finish making us want more