Work Plan: The Clermont Crew

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Project Overview

The wearable technology will be for maintenance workers who need to be aware of their physical environment at all times in order to keep themselves and the general population safe. Surrounding people often disregard safety barriers and as a result, our audio-centric solution would improve physical hazard detection in new areas of low visibility, crawl spaces, and high student traffic. This includes but is not limited to activities such as detecting live wires, exposing pipes, air quality, and student encroachment into the work area.

Deliverables

Our solution will be a design focused project, in the form of a simulation of a common work scenario maintenance workers encounter. Our goal is to deliver a simulation where a maintenance worker is on duty in a hazardous environment. The simulation will then have sounds reciprocated to the worker depending on the location of the obstacles. Additionally, we will also evaluate the simulation by talking to current maintenance workers, and testing their responses to the sounds of the device.

Tools, Platforms and Techniques

Simulation Techniques

* Demonstration Video (sounds added with Final Cut Pro)
* Unity 3D
* Processing

Research Techniques

* Informal Interviews
* Computer Recording
* Note Taking

Audio Development

* Ambient vs dominant sounds
* Synthesis vs recorded sounds

Timeline

* **03/16 - Instructor Meeting**
  + Interview Setup (Learning about the User)

Week 1

* **03/27-03/31: Meeting (12pm)**
  + Use Sounds from Class Exercise 6 for interviews
  + Interviews Completed
  + **ROLES**
    - Tiera- Interview set up
    - Everyone- bring pre-made sounds and perform interview

Week 2

* **04/03-04/07: Meeting (12pm)**
  + Refactor sounds based on interview
  + Perform the Simulation & record it (1st iteration)
  + 04/07 (Friday) - Progress Report Due
  + **ROLES**
    - Marcus-Refactoring Sounds
    - Everyone-Performing the simulation
    - Tiera - Set up follow-up interview

Week 3

* **04/09-04/14: Meeting (12pm)**
  + With feedback from project report, go through simulation again and refactor sounds. (2nd iteration)
  + Start on Project Vision video
  + Start on final paper and presentation
  + **ROLES**
    - Marcus-Refactoring Sounds Based on 1st iteration
    - Everyone-Performing simulation (2nd iteration)
    - Rob -Project Vision video
    - Dan- Final Paper and Presentation

Week 4

* **04/17: Meeting (12pm)**
  + Work on Project Vision video
  + Work on final paper and presentation
  + **ROLES:**
    - Everyone - final paper and presentation
    - Rob- Project Vision Video
* **04/21: Meeting (12pm)**
  + Work on final paper and presentation
  + Finish project vision video
  + 04/20- Project Vision Video Due
  + **ROLES:**
    - Everyone-final paper and presentation
    - Rob - Project vision video
* **04/24: Meeting (12pm)**
  + Wrap up final paper and presentation
  + 04/25- Final Report Due
  + **ROLES**:
    - Everyone- final paper and presentation

MEETING NOTES:

Consult users with generic sounds from sound board from ce6

* "What type of initial sounds are you guys going to create?"
* Env: Loud spaces, tons of stuff going on, loud ambient noise.
* Have a generic sound that you can play with them and test which ones are more preferred with the workers.
* Ask “what do you need?”

Recommendations about Simulation

* Walking up ladder, crawling through ceiling….what would a 3D mockup be like?
* Ecological validity: <http://study.com/academy/lesson/ecological-validity-in-psychology-definition-lesson-quiz.html>
* Give some kind of psychomotor, cognitive, physical demand, etc., before or during the sound
* Just playing sounds in a conf. room won’t give their true reaction in the field. Makes more sense to have something to preview in the field. (AKA no unity bc difficult to capture all different types of scenarios).
* Processing control panel to simulate alerts (wizard interface)
  + proximity of passersby
  + distance from dangerous power sources
  + Tools they are trying to use
  + Combines evaluation ( during simulation could gather quantitative data whether they hear the sound whether they understand the sound or react / take the appropriate behavior as a result of the info)
* Turn in design doc: report summarizes and analyzes data, and details about participatory design sessions with users, appendix with raw data..
  + Simulation should collect qualitative and quantitative data ( reaction time measured, survey at the end)
  + Control group, intervention group to make claims in detailed doc (5-10 maintenance workers is enough for this project)
* DON’T KILL FOLKS!
* What data do they need? Possible to do 3 rounds of interviews/3 rounds of sound creation
* What kind of data? Spatial, binary, etc, what are the parameters associated with it. How much information do I want to convey, to what precision, how to present it based off current context?
* Auto Adjust volume/nature of sound based off current environment
* Project Vision- pitch to sell to start up
* Another Video showing study in action
* Get them to on the playground? (could create experimental course)
* Divide up work
* Redo schedule