AudiHome

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Project #3

Work Plan

# **[Overview of project idea]**

People spend more than half of their life time in their home. As a dwelling place, home provides facilities to sleep, to eat, and to take a rest. With advancements of technology, home has equipped various appliances and tools enriching people’s lives. However, the development of home appliances made home a less safer place; home devices might inflict harmful result to house and human dwelling in it by causing home disasters: appliances fire, pipe explosion, and etc. Some of the home accidents are unavoidable, but our team noticed preventable cases in which people forget that they had been using the appliance and leave it turned on.

To keep users be engaged with home devices, Team AudiHome will be developing a home alert system focused on auditory design. Our system will be monitoring their use of the target home devices, warning them acoustically to check the device after a period of certain time via a stationary voice assistant. By applying the technology of Internet of Things(IoTs), our home alert system will be designed to target the following activities: Iron, Electric range, flooding, and leaving the door opened and unlocked. As a detective method, we are utilizing Samsung Smartthings outlet to monitor electric range, Samsung Smartthings Multipurpose Sensor to monitor doors, and Samsung smartthings Water Leak Sensor to monitor any water-damage vulnerable spots around the home.

Our project will place emphasis on selecting and placing the most appropriate audio alert sounds depending on situations regarding the degree of risks for each different activity so that the user does not feel unpleasant or it is unnecessary. There will be different modes of alert system in accordance of use phases so that each user can be notified of the threats at the proper moment. The customization funcion will also fulfill different preferences depending on user types and home environments. Based on studies, people generally do not want to be disrupted by loud and unpleasant noise, and it would be true especially in their homes. However, an alarm needs to go off in urgency and bring attention to it as much as possible. We will utilize the cognitive effects of different sounds to bring a non-intrusive, easy-to-live-with sound system to keep the home safe.

With the dynamic ways of detecting potential accidents, and digitized visual cues installed around the home, people will be able to enjoy their home life safely and smartly.

# **[description]**

**Audience** - The target audiences are generation X and Y that are familiar with new technology and home smart speakers such as Amazon Echo and Google home assistant. This project will provide a reasonable design that will cater to the needs of the technologically advanced generation in the American society.

**Design** - We will be designing auditory alarms that go along with the smart awarehome system. We will be focusing on choosing the right sound for the right event; different earcons will be chosen to describe each life-threatening situations more precisely based on the degrees of risk and security compromises. The different levels of sensitivity (from minimal alerts to very strong, frequent alerts) will be also expressed in our auditory home alert system. We will also take care to choose the most practical situations there can be when we come up with specific situations where the alarm will be needed.

**Implementation** - We will utilize Processing and Beads library when applicable in the wizard of oz testing

# **Tools/platforms/techniques**

**Research** - We will conduct research to find the most appropriate types of earcons and audiocons to meet the tastes of our target audience.

<https://www.huffingtonpost.com/rosie-osmun/sleep-sound_b_8401364.html>

<https://www.media.mit.edu/speech/papers/2000/sawhney_ToCHI00_nomadic_radio.pdf>

<https://www.media.mit.edu/speech/papers/1999/sawhney_CHI99_nomadic_radio.pdf>

<http://www.berkeleywellness.com/healthy-community/environmental-health/article/how-noise-harms-our-health>

<https://www.realsimple.com/health/preventative-health/noise-pollution>

**Techniques** - We will utilize the latest trends of technology and research material to figure out a design that makes sense with the current market of technology.

We will perform a wizard of oz experimentation with participants from the Georgia Tech student community, and setup the experiment in the Awarehome or a similar environment.

# **[Timeline]**

June 26 (Tues) - Work plan modification

June 28 - Work Plan due, start on brainstorming which sound earcons/audiocons should be used for the system

July 28 ~ 2 Research and Reading papers

July 2 - Tentative meeting to discuss further on individual research (need to read all paper and research)

July 3 - Finalize sound selection and start on forming the auditory system (which sound for which occasion and which

July 6 - Rough draft of complete sound system

<time for test prep and midterm HW>

July 10 - Test, catch up to plan if delayed, if not delayed, test on Aware Home, presentation preparation

July 12 - Progress Presentation, feedback review, finalize system to test

July 13 - Apply feedback review changes, start on implementation

July 17 - midterm HW due, implementation meeting

July 17, 18, 19 - testing days

July 19 - feedback

July 20 - apply feedback, Make final presentation

July 23 - do more work if possible before final project

July 24 - Final Project Deliverable Due

July 26 - Final Project Presentation