COMP 5800 Ubiquitous Computing Spring 2017
Assignment #2
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Ideas List

1. Quit Smoke using tracking device and mobile app for Smoking people who want to quit

a. Solution definition:

According to the Centers for Disease Control and Prevention (CDC), cigarettes contain over 7,000 chemicals and about 70 of those can cause cancer. Smoke also causes heart disease, chronic obstructive pulmonary disease (COPD), respiratory problems, fertility issues, and more.

Quitting smoke can be incredible difficult, people usually need support to success with quit plan. We have many tools to support smoke people to quit such as: Guide Line, Therapist Coach, Nicotine Patches/Gum. The popular of smart phone create another method to help people quit smokes is using Quit Smoke Apps. Depend on user smoking habit, Quit Smoking Apps can suggest a quit plan, tracking quit progress. The Apps can also help connect user with quit coach and show people necessary guideline and helpful information throughout the quit plan.

b. How it works:

One problem of current quit smoking app is requiring user log smoking habit and tracking progress by hand so the data may not accurate lead to low success rate.

My idea is developing a smoking track device base on monitor moving activity of hand to mouth and breath style of smoking activity to log exactly time of smoking, how many cigarettes a day and how frequency of user smoking. This data will help provide for my Quit Smoke App reliable data for suggest quit planning and tracking quit activity.

Quit mobile app usually charge user from 3-5 USD/month

2. "I am with you" – a smart watch for Kid have problem with "executive functioning"

a. Solution definition:

"Mathew does all his homework, but half the time he still gets zeros because he does not turn it into the teacher"

"Every morning we have a major battle in our house, Alan's alarm goes off a quarter of seven. I have to remind him to get out of bed at least five time, and then I have to keep nagging just to get him to brush his teeth and get dressed before bus comes and he still miss the bus! I am so tired going through this every morning"

"You should see Mary's backpack! Old papers. Gum wrappers, homework assignment…what a mess! Her locker looks the same way. How can I help get Organized?

Sound familiar? This come from introduction of the book "Late, lost and unprepared" and it is also my experience with my son, Minh, 9-year-old boy. These kids have problem with that professional call "executive functioning".

b. How it works:

With these kid, the key strategy to help them is provide external structure, help them develop the schedule and routine, parent need start the task with children, use the reward to motivate desire behavior. The strategy required parent always with them to help them. But Parent must go to work and cannot spend all time with the kid. “I am with you” is smart watch kid can wear and receive support from parent every time, everywhere. The smart watch can record the schedule, alarm the kid to start a function, have check list to help them check routine, and can cheer them if they do the right thing. These devices can work with the kid via voice and communicate with parent via a smart phone app.

Market price for a smart watch for kid varies from 30 USD to 150 USD, my smart watch may have price from 50-70 USD.

3. Cloud service for Improve Lung Cancer detection help early detect Lung Cancer for patient

a. Solution definition:

In the United States, lung cancer strikes 225,000 people every year, and accounts for $12 billion in health care costs. Lung Cancer is hard to predict. People usually known the Cancer in late phase where the nodule is very big and cancer cell already spread to other part of body so the survive time is only count for months or one year. Early detection is critical to give patients the best chance at recovery and survival.

b. How it works:

Early Lung cancer detection is challenge because the doctor need to assess base on CT scan and hard to detect the nodules by eyes. The Lung cancer nodule at the early state is hard to see and hard to predict how it grow in future. The accurate of current early detect is not high.

Use Machine Learning may help improve Lung Cancer Detection. Machine Learning algorithm can be very intelligent if it trained by a big image data.

My idea is developing a Cloud Service to help analyses Lung CT Image and predict the. The back end is a Machine Learning System with a big Lung Image data come from Hospital help training computer how to detect the nodule. The service will process Lung Image Data and answer the question this image can lead to cancer or not.

A CT Scan cost may vary from 1000 USD to 3000 USD and Lung Cancer detection service can be cost 10% of the scan.