Title: NotiFire : Hearing Impaired Alerter System Using Haptic Technology

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Abstract

This project involves designing a low cost haptic device that could help deaf students to be aware of the situation that will be identified through the research. This research will be using the tactile technology concept. As we know, nowadays, the world is very focus on productivity and achievement. Everyone is looking for a job to survive in this world, and this do not left those with impairment. As they now also been included in the working sectors, the environment of work place must be examine if it is suitable for them to work in usual surrounding. By identifying the hazardous situation for a group of hearing impaired that working in the lab environment.

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1.1Background of studies

1.1.1 Hearing impairment people

Hearing impaired is one of the term that has been used in order to portray the people that having hearing problem or can be say deaf or hard of hearing. Basically to deafness can be categorized into two major types;

As where the sound cannot pass through the outer or middle ear which is conductive deafness.

Secondly, as the quality of sound and its loudness often been reduce as the cause of the deafness is in the cochlea or in the auditory (hearing) nerve. This type of deafness is called sensorineural deafness.

Hearing impairment also can be classified into a few class depending on their hearing acuity. As this acuity can be measured in decibels (dB) since it is needed to detect sounds across a range of frequencies (250 and 8000 Hertz).

Class (Rank)	Decibels of hearing loss (dB HL)
Mild Adults Children	 26 -40 dB HL 20 -40 dB HL
Moderate	41 -54 dB HL
Moderate severe	55 -70 dB HL
Severe	71 -90dB HL
Profound	91 dB HL or greater
Totally Deaf	Cannot hear at all

Attracting the focus to Malaysia as the number of people with disability according to Malaysian welfare department are 359,203 as this number is being reduced to 43,788 by classifying the number of people with hearing impaired. This show that 12 percent of the disable in Malaysia are people with hearing impairment.

As nowadays, However, this disability did not stop many of them in continue to be successful in life. They also involve in the education and workforce sector which increase the productivity of the country by contributing their knowledge, skills and abilities despite letting their hearing problem become a barrier for them. The government and the NGOs also joining forces in order to help the hearing impaired to join the communities as many facilities and new technology introduce to help them in many ways. The common technology used to assist them in their work include those involving visual and haptic feedback.

1.1.2 What is haptic devices

Haptic devices is a device that using the sense of touch in order to communicate or deliver a non-verbal communication that only using the sense of touch(tactile). Basically scientist had do the research about haptic from decades ago, as they try to understand the biology of it since it is related to human body, skin. They identify how communication can happen by using only the sense of touch.

Visual and auditory communication can easily been deliver by computer-based technology, however the sense of touch is difficult to be integrate with the computer based technology to deliver non-visual (touch) communication.

As the technology grows day by day, the haptic concept is being apply widely nowadays. Although the usage of it still do not cover many area of our lives, but the technology had been here to be used.

1.2 Problem Statement:

Since the hearing impaired had join the education and workforce, there are some aspects need to be change or improve in order to gives equality towards them. The main problem that arise in this issue is, "are the safety of the hearing impaired is secured?". Based on our general knowledge, we know that most of the buildings were equipped with alerting device to tell whether there are fire or emergency that happen around the area but are these devices equipped is suitable or effective in alerting those with hearing impaired?

As referring toward an online questionnaire that had been done, it is stated that the current technology is in only average as it is not good or effective to alert them.

The current technology used is by alerting all the people in the building by ringing the fire alarm or signalling with the sirens, which are totally giving disadvantages to alert those with hearing impaired. Fortunately, there are some effort as the beacons, light alerting system had been installed in certain building in order to help them notify or alert about the current situation. However the same question arise as , "are this method effective?". This is because as when we are focusing in doing some matters, we might not be notice by the lights (beacons). Moreover when it is in the daylight.

There are other issue that we need to consider about as there are technology invented that can be used to solve this situation as it is haptic device. However, haptic devices have been used for entertainment such as gaming in order to gain real life experience from the game itself instead been used to help the one that needed it. There are efforts to design and build a haptic devices that can alert those hearing impaired but a lot more is needed especially to assist those with impairment.

In general, haptic devices are very costly and usually tailored-made to suit the purpose of the tasks. This project will basically try to help in providing a safer environment with just a low cost device for the hearing impairment by using the haptic technology.

1.3 Objectives:

The objective of this research are :

-To examine type of danger or hazardous situation that the hearing impaired is being exposed and how the current system can help them comparing on how haptic technology can be implant to improve the system

-To identify the suitable method to apply haptic technology for the situation identified

-To design a low cost haptic device/system that could help the hearing impaired to be aware of the danger or hazardous situation identified

The scope of study for this project is to find or identify on the response of the student itself when a fire happen as if the current technology used are really helping then to notify of alerted. Since haptic technology will be used for the propose of this project, some testing will be done in order to study if haptic technology does bring benefits to the situation of fire. Lastly to focus on the cost in designing the device itself as if it is low costs, it can help the student or the organization to obtain it. As this project will be on progress as the testing and the study will be done for the students that work in a controlled environment such as kitchen or lab.

2. Literature review

2.1 Disability – hearing impairment

The people that having hearing impairment cannot be ignored by the society because they can do a lot of contribution for the society. Their disability might not be seen by normal eyes, until an interaction had been done with them. With this included the survey that had been done by certain organisation for the percentage of people with hearing impairment problem ;

"...the prevalence of hearing impairment in the general population was 17.14% with an estimated population of 3,962,879." - Malaysia National and Hearing Disorder Survey, 2005

"...278 million people worldwide have moderate to profound hearing impairment whereby at least half of all hearing impairment is preventable." - estimated by WHO,2005

"A Brief Summary of Estimates for the Size of the Deaf Population in the USA Based on Available Federal Data and Published Research:

- About 2 to 4 of every 1,000 people in the United States are "functionally deaf," though more than half became deaf relatively late in life; fewer than 1 out of every 1,000 people in the United States became deaf before 18 years of age.
- However, if people with a severe hearing impairment are included with those who are deaf, then the number is 4 to 10 times higher. That is, anywhere from 9 to 22 out of every 1,000 people have a severe hearing impairment or are deaf. Again, at least half of these people reported their hearing loss after 64 years of age.
- Finally, if everyone who has any kind of "trouble" with their hearing is included then anywhere from 37 to 140 out of every 1,000 people in the United States have some kind of hearing loss, with a large share being at least 65 years old."

  - National Health Interview Survey (NHIS)or the Survey of Income and Program Participation (SIPP)

2.2 The current technology used(alternative)for hearing impairment

Through some studies that had been made, hearing impaired person that working in a controlled situation such as lab or kitchen had not been given a good safety environment to avoid harzadarous situation. As example, when there are fire at the building, the alarm system will be triggered which will help people to identify the situation. However, people with hearing impaired might not realise about the current situation. Some building might have the light alarm which will light up when some harzadarous situation occur, still this method is not really practical to be apply in lab or kitchen as the people in it do not notices the light alarm as they been concentrating on their works.

Besides that, there are actually some devices or gadgets that help the hearing impaired person to identify the situation by using haptics but it is high in cost and inconvenience as it is handwired to the building which limit the person movement. As addition it is also usually tailored-made to suit the purpose of the tasks and may not be suitable to be used in another area.

Hearing aids

Hearing aids is a electric device that used to help amplify the sound its user receive. Usually it is being wear near the ear as there are many types of its such as;

Custom, In-The-Ear (ITE, ITC & CIC) : suitable for mild to severe hearing loss

Figure 1 : In-The-Ear

Receiver In Canal (RIC) : suitable for mild to severe hearing loss

Figure 2 : Receiver In Canal

Standard, Behind-The-Ear(BTE) : available for all degree of hearing loss

Figure 3 : Behind-The-Ear

Hearing aid does really bring a big impact toward the hearing impaired society. However, it still do help if the person is a total deaf as they could not hear at all and amplifying the sound does not make any different for them.

Beacons

Beacons is a device that been used in order to gives signal or guide. The basic example we can see is the lighthouse where it give direction to the ships. this technology has been apply in our safety systems, in order to help those with hearing impaired and give extra alert to the normal persons. the medium of signalling is light as usually red light had been used to alert about dangerous situation.

Figure 4: Types of beacons used, fire alarm strobe light

The implementation of beacons in the safety system is a very good step which improve the fire alarm system that only depend on hearing by giving signal in term of visualisation.

Deaf Alerter

"Not everyone in your building can hear your fire alarm..." is the slogan that been used by the Deaf Alerter® in order to justify their product. Their product, Alerter^{TM} is one of the best alerter system that we can consider in order to help the hearing impaired, as it vibrates when it receives a message from a deaf Alerter transmitter. It is portable, hence it is easy to be carried around. This product is being widely use in U.K as there are transmitter being set up in many buildings.

Figure 5: AlerterTM

Unfortunately, this system is not very widely used around the world. Furthermore, although the price had been stated as economics to install the Deaf Alerter, the cost of installing it might be costly.

2.3 The use of haptic devices

The haptic device had been used in our society in many fields/sectors ;

Gaming

As for example, the DualShock controller from the PlayStation 1, from Sony had been using vibration in order to apply the haptic concept. The gamers can feels this sensation of crashing into another cars as the controller vibrates when it happen while playing the game.

Figure 6 : DualShock controller

Mobile phone

Haptic also is being used widely in the mobile devices. This can be easily being seen as most of the newest phone models are using the touch screen technology. The phone user will usually sense the vibrating that happen when the touch the keypad on the phone's screen.

Sport

Laser tag is one of the popular modern sport. It is a game that using laser to tag another players, which and improvement from the tag games that children used to play before. Given some target point at the player body which being attach at the jacket/vest when they start playing. The jacket/vest will give a vibration sensation when the laser had been point at the target point.

Figure 7 : Laser Tag equipments

Medical

Haptic also had been implemented in the medical sector, as there is a robot that had been used in orthopedic surgery. Mako Surgical: RIO Robotic Arm System had won the 2010 Gold Medical Design Excellence award as it is the first FDA- cleared robotic arm system for orthopedic surgery. This robotic arm system gives a high level of precision and do the implants with optimal positioning.

Figure 8 : Mako Surgical: RIO Robotic Arm System

There are also simulator that had been used to help in the medical sectors using the haptic technology. One of the example is the Laerdal Virtual I.V. Simulator. This device help the student or the new learner to improve and learn about the IV insertion and phlebotomy.

Figure 9: Laerdal Virtual I.V. Simulator

Tele-operated robot surgery also is one of the example that show the usage of haptic technology in the medical fields. As there are situation that require a long distance surgery to be done, here is where the tele-operated robot surgery need to be done. The surgeon will control the robot from another place which also means that the patient is not in front of him. With the haptic technology, the surgeon can feel the haptic feedback when conducting the surgery.

Manufacturing

The Barret WAM ™ arm is one of the device that used haptics technology in manufacturing. The Barret WAM™ is a paint-spraying tools that had been used to train paint-spraying trajectories. Since some part of modern products have difficult surface to be sprayed with, the present of this tool helps a lot in overcoming the problem that had raised.

Figure 10 : Barret WAM ™ arm

Tacton

Tacton is a device develop by using the tactile technology as the purpose is to help visually impaired. It is being used to guide the non-visual to have computer interaction. Specific studies had been made to know the duration, wavelength, range, rhythms and temporal pattern that suitable for the non-visual to have better communication and accurate translation and interpretation. By using the rhythms concept, the tacton use music notes to encode the word in that being display at the computer so the non-visual can easily know and identify the word that being shown on the monitor

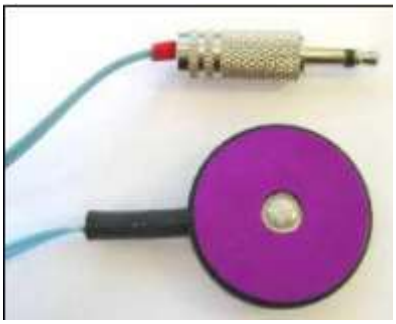
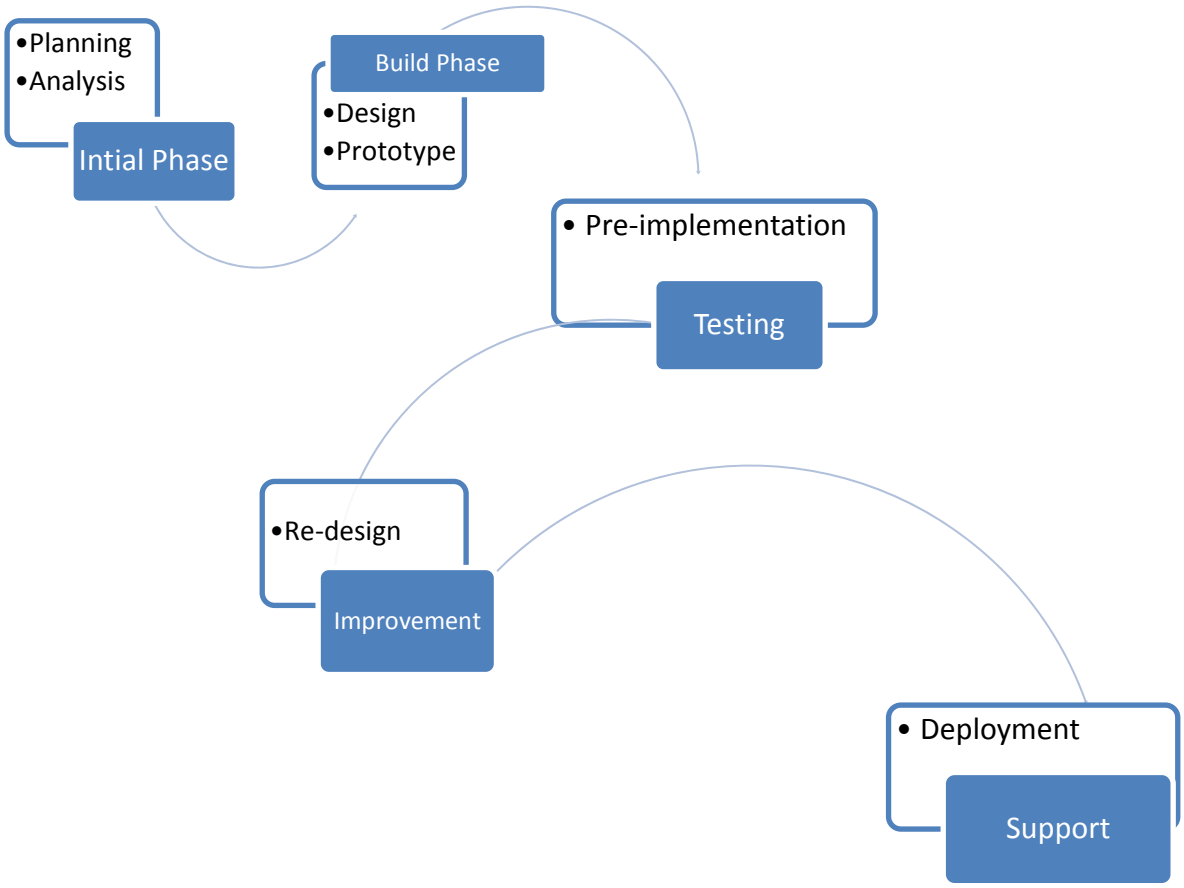


Figure 11 : Tactor (tacton)

3. Methodology



Based on the diagram above, it show the methodology or how the progress of this project should be. It consist of five phase of process need to be follow in order to finish the project.

Initial Phase

This phase consist of two major part which are planning and analysis

Planning

As for planning, the author had plan to help the hearing impaired by using haptic technology to identify the danger and hazardous situation surround them.

In order to meet all the objective a proper planning need to be made due to the time constrains as well. The author plans to do focus on the second objectives of this project first which is; to identify the suitable method to apply haptic technology for the situation identified. As this part is very time consuming since different method should be used to identify the most suitable method that can be implanted during real situation.

The author will try to follow the gantt chart that show the flow on when should the methodology phase should be done within the period given.

Since the author will not only focusing on one method, the author need time analyse method available to meet the project objectives.

As to fulfil the dateline given to the author, the author will decide between only two method which in form of new device or android. However this two method will come in the same concept which is the host/server and client concept. The concept is to have a server/host that can trigger all the devices that register as its client;

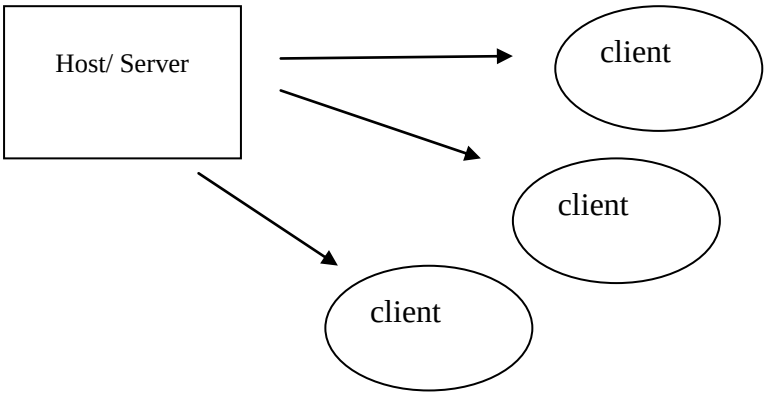


Diagram : Concept

New Device

The author is planning to use the past final year project that also use vibration as the main component. The project is being develop by Ahmad Faidz Hamzan, a low cost haptic device to support dyslexic children's learning activities.

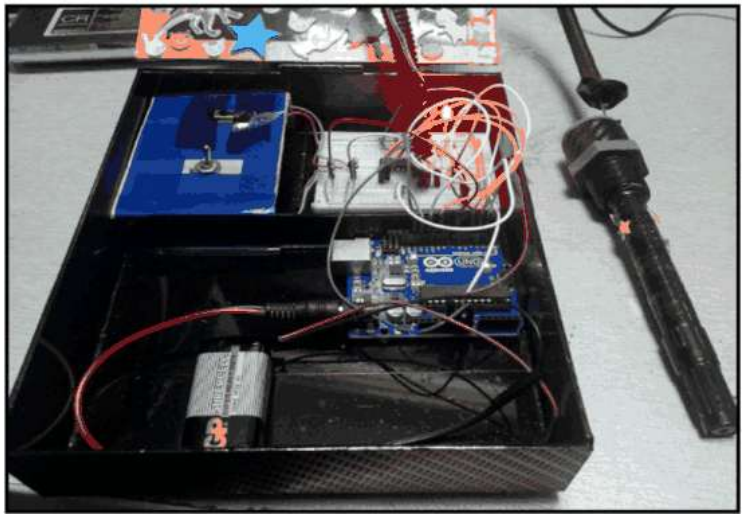


Figure 12 : Dyslexic Children support device

By using this project as starting platform, the author plans to re-build a new device that meet objective with this project for the hearing impaired. Furthermore, the author has come with some ideas to applying the sever/host and client concept. As to apply the concept, Arduino wifi shield, is the suitable board that can help the device to receive signal from the host by using wifi,

Figure 13 : Arduino Wifi shield

By apply the new hardware to the device will help the author to progress and see how the device will work.

Android

As from the literature review, haptic technology also can be found in the phones, as to be specific, Smartphone. By developing an apps for the phone, the concept of the host and client can be done as the phone will react as the client and there will the host which might be also Smartphone or personal computer. This receive and signalling can be done by using wifi, Bluetooth or internet.

Analysis

By doing a survey with Selina Ooi who is a deaf person herself had stated that it is true that vibration can help in order to improve the current danger alerting systems as they can feel the strong sense especially from vibration.

Name :

Selina

Email :

ooiselina@gmail.com

Website

www.selinawing.com

How are you related to hearing impaired ?

I am Deaf person

Do you think a haptic device can help in improving the current danger alerting system?

Yeah, the hearing impaired can feel the strong sense, especially the vibration

In certain situation (please refer below) ,as for the suitability of this haptic device, do you think it is better for it to be attached at the user body or can be separated as handphone?

Yeah, you maybe can create your creation watch that can vibrate? Or bracelet? anything can. In China, Malaysia and any country, the products got exists already. For example, when in the restaurant, the Deaf person work as waiter, a custromer call him, but he don't hear. But, got provided call button machine, can press it. The waiter who wear watch make vibration, and can see what number table on his watch.

As additional point, please help by giving more opinion or suggestion regarding this matter

Maybe you never see existing products, you suggest go to check at http://www.dibcoffeesofhawaii.org/Home_Page.php Deaf staffs got wear the watch make vibration.

And see my review at http://deafboleh.blogspot.com/2012/07/deaf-in-business-coffees-of-hawaii-2.html And you can visit KFC at Sentul, some Deafs

who manage KFC there. You can try there.

Since it had been proven that the vibration which a part from the haptic compartment can be really useful to alert the deaf people, another study must be made to identify type of hazardous situation or danger that this group of people is being exposed to.

Based on a report from Marlina A. Manaf 2012, show that in her research with a group of deaf student that working in the school kitchen workshop is being exposed to fire. As if the fire occurs, the safety systems is not really helpful toward this group of people as they are mainly using the sound to alert people about the fire.

Based on observation, the current safety systems that being applied and been used is mainly focusing on fire as if others hazardous situation such as earthquake and flood also use the same alerter system.

Analysis on the method and device

During the analysis period the author has come out with the decision between the both ideas. The decision has been made as second idea(smartphone) is the most proper in this situation as it meet the requirement low cost, haptic technology is present and due to the feasibility of time.

Furthermore, Smartphone is a common device that people have, as this also include the deaf people. although they are not using it for calling but they are a lot of ways to maximize the use of Smartphone as for communicating, they can use SMS. The author also do some observation on this matter since the author had join two facebook groups which the members are mostly deaf people. The author realize that the deaf people upload media and update their status via mobile phone. This discovery helps the author a lot in deciding which method should be use.

It is also important to justify here, why the first idea(new device) had not been chosen. This is because, the device that will be develop not very suitable in certain situation as, the user need another space to bring the devices along which might become annoying at certain point of time. As addition, to compare with the Smartphone, the device will be very disadvantages in term of cost, as the cost of it can reach the Smartphone's price itself with only one function.

Build Phase

The progress on the project is doing well for now as it still goes on track

This phase also consists of two major parts which are design and prototype;

Design

The basic concept of the design will be focus on the interface of the alert system. A simple theme has been chosen by the author for this system, since this system should only be use during emergency situation. The interface must the deliver the message which is to alert or notify the hearing impaired during hazardous or danger situation.

Figure 14 : basic design

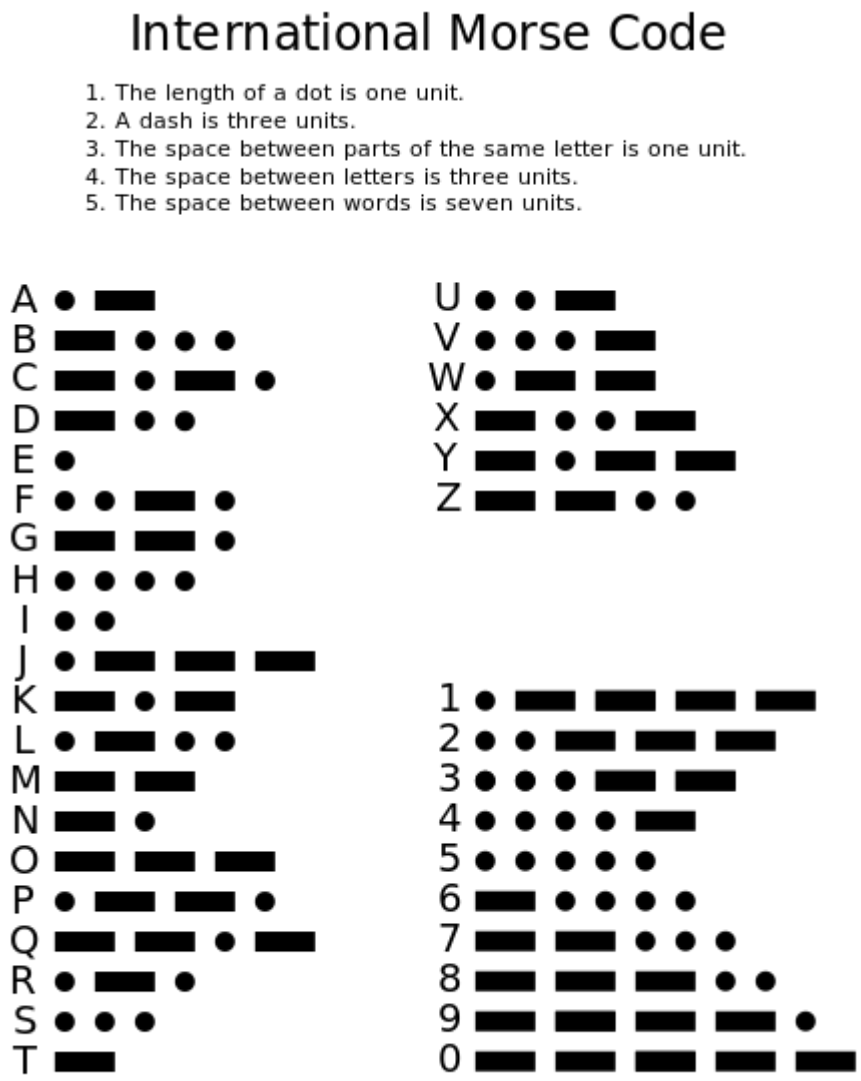
Prototype

Some coding had been made by using eclipse as the platform and the language use is Java.

```
package com.ash.alert;

import android.os.Bundle;
import android.os.Vibrator;
import android.app.Activity;
import android.content.Context;
import android.view.Menu;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;

public class Main extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);

        Button b = (Button) findViewById(R.id.button1);
        b.setOnClickListener(new OnClickListener() {

                    @Override
                    public void onClick(View s) {
                          // TODO Auto-generated method stub
                          Vibrator v = (Vibrator)
getSystemService(Context.VIBRATOR_SERVICE);

                          int dot = 200;      // Length of a Morse Code "dot" in
milliseconds
                          int dash = 500;     // Length of a Morse Code "dash" in
milliseconds
                          int short_gap = 200;    // Length of Gap Between
dots/dashes
                          int medium_gap = 500;   // Length of Gap Between
Letters
                          int long_gap = 1000;    // Length of Gap Between Words
                          long[] pattern = {
                              0,  // Start immediately
                              dot, short_gap, dot, short_gap, dot,    // s
                              medium_gap,
                              dash, short_gap, dash, short_gap, dash, // o
                              medium_gap,
                              dot, short_gap, dot, short_gap, dot,    // s
                              long_gap
                          };
      // Only perform this pattern one time (-1 means "do not repeat")
                          v.vibrate(pattern, -1);
                    }
              });
```

```
}
```

The code shown is on the main function, which will basically vibrates based on the Morse code. Here shown the international Morse code for vibration pattern that had been use for this project.



Testing Phase

The system is being tested on the real device

Figure 15 : System on real device

this phase show on how the device vibrate according to the morse code that had been set; SOS.

Improvement

During the first testing, the author realize that there are some major problem while inventing the apps. The major problem is the server/host and client concept part need a lot of time in order to develop it. Even though the author manage to develop the haptic part, without the server/host and client part the apps will be useless.

Hence the author had made up the decision to look for some loophole in this project to continue and finish within the time period.

The author manage to re-design the idea as instead of using apps as the platform, the author use browsers. Since Mozilla Firefox browser in the android support the vibration function , it is easier to develop a website which have the ability to trigger the phone vibration.

Support

Deployment

In this phase, extra information of guideline of usage will be include with the device. Some legal requirement might be needed in this phase as for example, pattern.

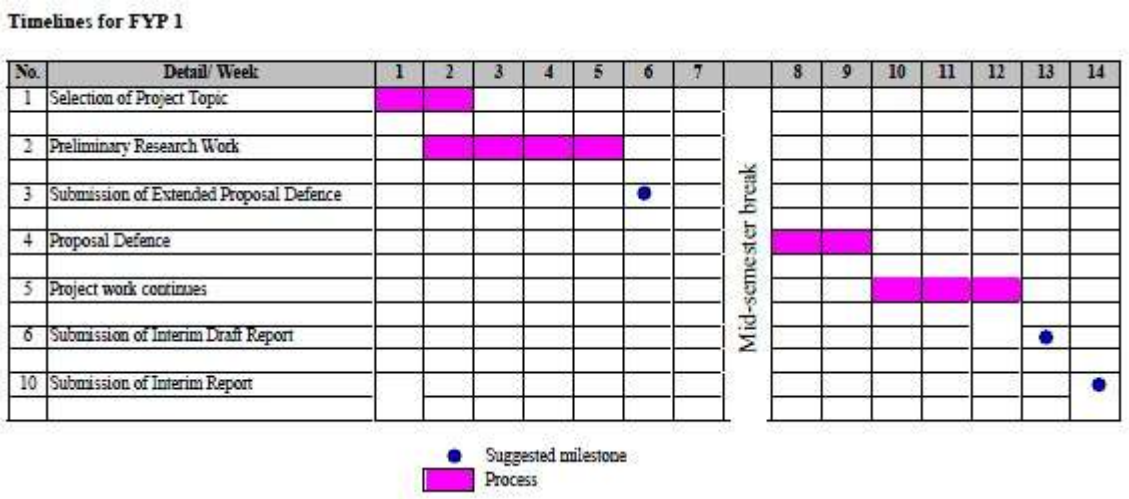
Project Activities

For the project activities in FYP1, the author had to search a candidate of hearing impaired person in order to do a conformation questionnaire. This questionnaire is being used to strengthen the motive of this project.

Selina Ooi, founder of DeafBoleh Blogspot, as she is deaf herself, had been agree in helping the author to answer to a questionnaire. All the data had been analysed and been used to write this report. She also help the author to find the hearing impaired community in one of the famous social website, Facebook.

As in project activities in FYP2, the authors will basically focus more on developing the project. The author has to go through some time constrain problem as the scope is too big since the author did not allocate learning period to develop the project. However, the project can already be used during the real situation

3.1 Gantt Chart



Gantt Chart										
January 2013-September 2013										
No	**Activities Phase**	**Jan 2013**	**Feb 2013**	**Mac 2013**	**Apr 2013**	**May 2013**	**June 2013**	**July 2013**	**Aug 2013**	**Sept 2013**
1	**Initial Phase**									
2	**Build Phase**									
3	**Testing phase**									
4	**Improvement phase**									
5	**Support**									

3.2 Tool Required

Smartphone (Android)	To act as the client or the devices that will alert the user
Eclipse (Software)	As the platform for the coding and interface part
Notepad ++	To write the coding part after the improment phase
Xampp	To test the functionality of the website
Mozilla Firefox browser	To trigger the vibration function on the smart phones

The tools required might been change as the process go on as it will based on the suitability of the device that will be design.

4. Result and Discussion

System concept/ system use case

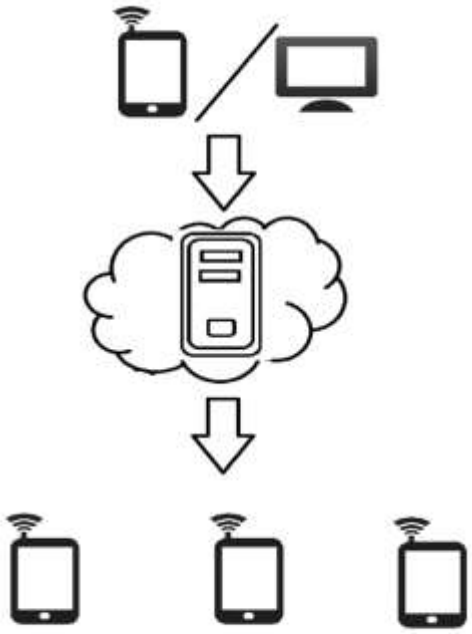
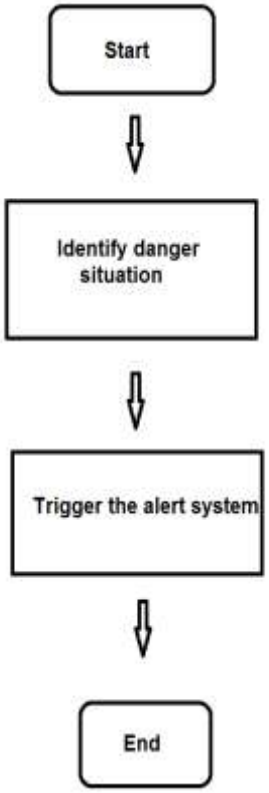


Figure 16 : System concept

System flowchart



How the system should be handle

Interface

Figure 17 : User interface before the vibration trigger

Figure 18 : User interface after the vibration been triggered

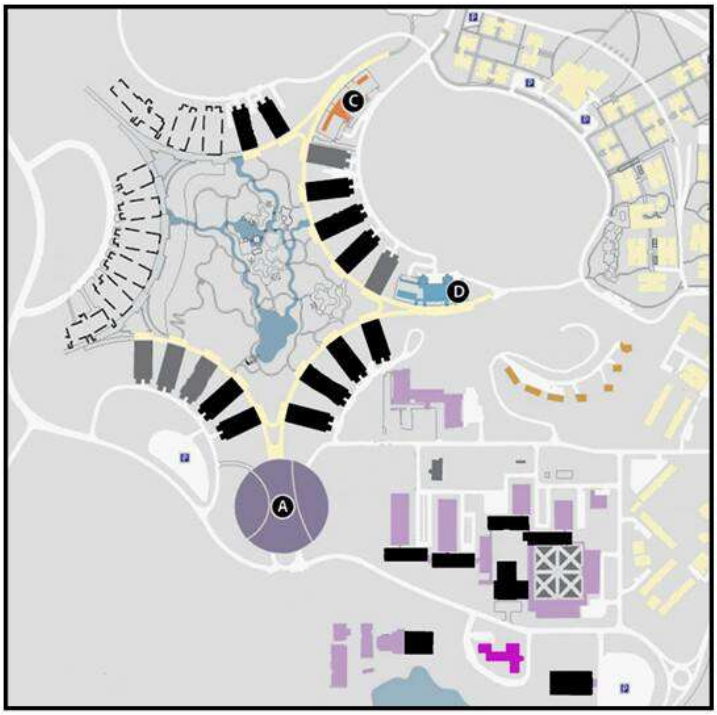


Figure 19 : map interface to show the gathering venue

```
<html>
    <h1>Welcome to NotiFIRE system</h1>
    <p>This system will notify you with vibration as a fire occurs.
    Your device will vibrate in the morse code language as SOS when fire happened.</p>
    <p>You can stop the alert by using the "stop alert" button</p>
    <script src="jquery-1.10.2.min.js"></script>
    <script type="text/javascript">
        var t;
        //checkVibrate();
        $(document).ready(function(){
            t = setInterval(checkVibrate,7000);
        });

        function checkVibrate(){
            $.post("check.php", function(data) {
              //alert("Data Loaded: " + data);
              if ( data === "1"){

                navigator.vibrate([200, 200, 200, 200, 200, 500, 500, 200, 500, 200, 500, 500, 200, 200, 200, 200, 200, 1000]);
                $("#pic").html("<img src='firealarm.jpg'>");
              } else {
                navigator.vibrate(0);
              }
              //console.log(data);
            });
        }

        function stopVibrate(){
            navigator.vibrate(0);
            $("#pic").html("");
            clearInterval(t);
        }
        //
```

Pre-coding part of the vibration and user interface

For the result, the author had come out with the idea to use android as platform to develop the project. this is because after joining the deaf community group through the internet, the author discover that the deaf person also have Smartphone. they use it to surf the internet, play games, interaction between their family and friends using text message or online chatting. So the idea to use Smartphone as platform to improve the security and safety for the deaf person is a good idea.

Furthermore, as nowadays many people had subscribes to data plan in order to surf the internet, the idea to develop a website that can trigger phone vibration is very convenient and easy to implement. However, in order to make it easier to use and more practical, the author decide it is better for the place, as example learning institute that provide wi-fi to direct the user to this NotiFire function in their webpage, so the user do not need to use their own data plan and for those who did not have the data plan also can enjoy this security and safety system.

This system of should only can be trigger by authorized person in order to avoid fake alert which can cause harm to the users. The authorized person will be given access to the admin site which will have the function to send signal to all the device that are running the website on their device.

As addition, a guidance map will be pop up when the admin send signal to the phone, as the map will show the assembly points that available at the current place. The vibration also will be in mourse code pattern that will vibrate as S.O.S. This is because to help the user to differentiate between normal vibrate and NotiFire's vibration. A guide page also will be provided in order to prepare the user for the real situation.

Figure 20 : Show the example of direct link that should be implement after login to wi-fi of the current place

By having a direct link, it will ease the user from forgetting to go first to the page as if they did not go to the page then , the alert cannot be trigger on their devices.

So for the result, this project actually initiate the progress on further development of this project as there are still a lot of room that can be improve. However, the current system that had been develop by the author actually is enough to give the essential safety that is required to alert the deaf people.

since throughout the time observing and joining the group of the deaf, this is the best concept that the author had come with. as it meets all the objectives set up for this project. It is proven that is low cost the author only use what the future user have nowadays. the author also hope this project can be implement for free of charge as it is for the safety of the people themselves.

5. Conclusion and recommendations

As conclusion, this research might bring a big change to the one with hearing disability. This is because they can be focused more when doing their work as the safety environment and features had been provided to them in their working place. This project also had meet all of its requirement as it goes on. This project is a good initiative to provide equal safety and security system to the deaf people as it patch up the weakness of the current safety and security system. The author hope this concept can be develop even further and be implement all around the world as we can provide the best security and safety system all around the world.

The recommendation for this project is to be develop in apps since it is more convenience to be use by the user. Furthermore, an extra device which can amplify the vibration also should be build in order to improve the alert system. It is also recommend that this project can detect exact location of the deaf and provide a detail emergency layout to guide them to the safe or assembly point.

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Appendices

Post a post using mobile

Post about mobile phone

Survey on phone user

Deaf Boleh! Malaysia

SELINA Wing

Website developed by the hearing impaired

Welcome to NotiFIRE system

This system will notify you with vibration as a fire occurs. Your device will vibrate in the morse code language as SOS when fire happened.

You can stop the alert by using the "stop alert" button

Stop Alert

Click on HELP for further guidance.

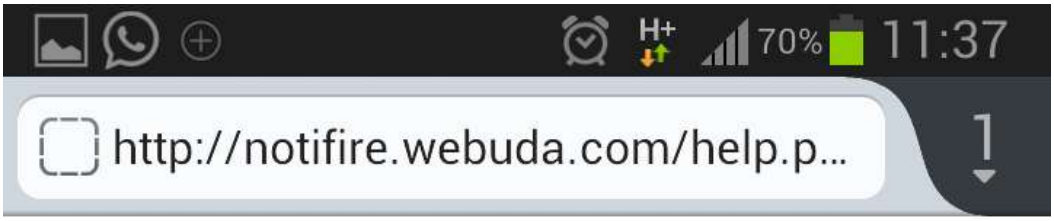
Saving screenshot...

http://notifire.webuda.com/

Welcome to NotiFIRE system

This system will notify you with vibration as a fire occurs. Your device will vibrate in the morse code language as SOS when fire happened.

You can stop the alert by using the "stop alert" button



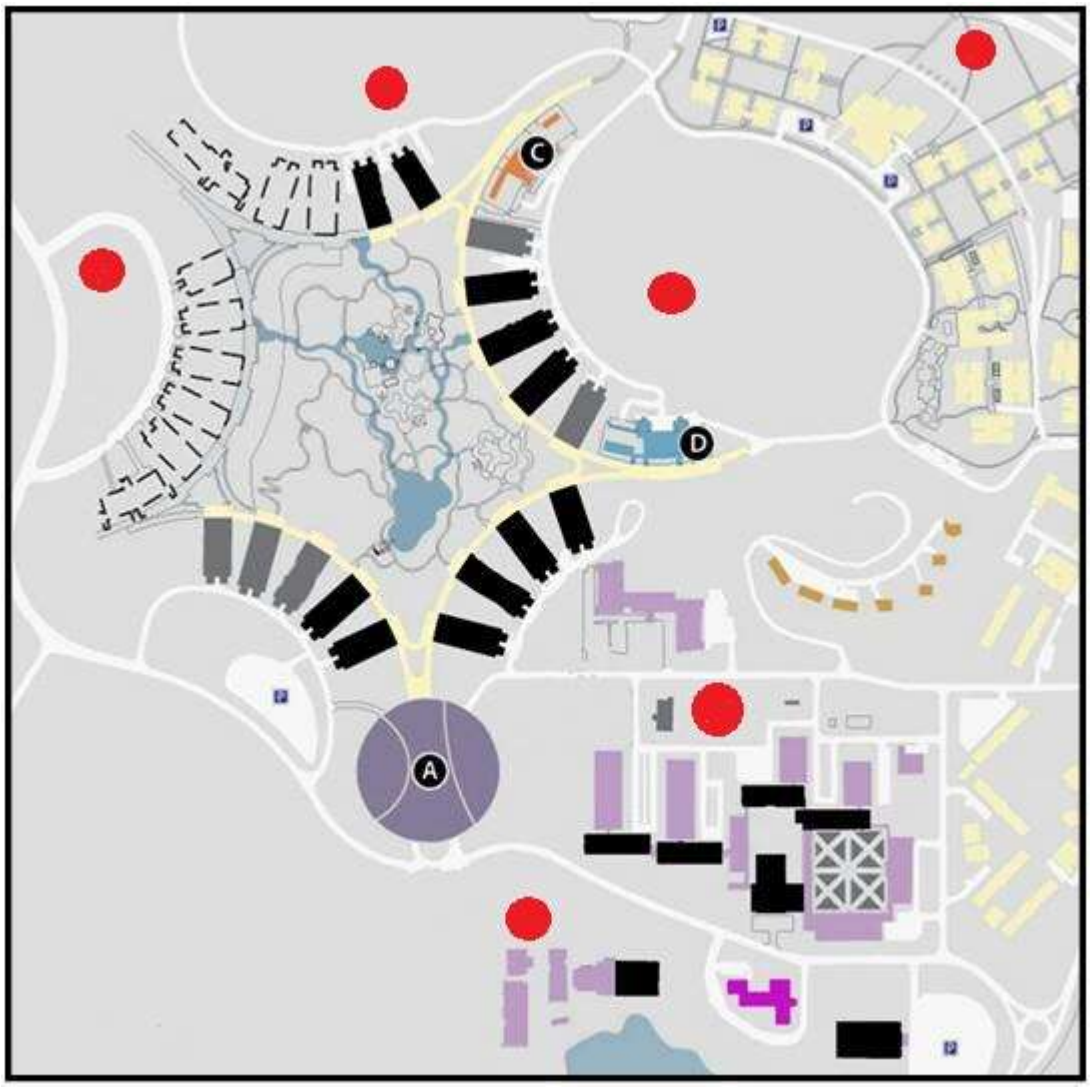
Guide Page

Alert Sample Vibration

The vibration will be in Morse code as it will tell you S.O.S
and it will keep on looping till the admin stop the alert or you click on the stop alert button
You can click on Vibrate button to feel the vibration

Vibrate

Stop Vibrate



Map to show assembly point available

Summary

Name :

Selina

Email :

ooiselina@gmail.com

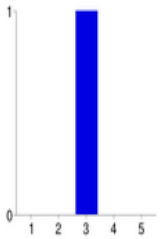
Website

www.selinawing.com

How are you related to hearing impaired ?

I am Deaf person

How do you rate the current safety of workplace for the hearing impaired?



1	0	0%
2	0	0%
3	1	100%
4	0	0%
5	0	0%

Do you think a haptic device can help in improving the current danger alerting system?

Yeah, the hearing impaired can feel the strong sense, especially the vibration

In certain situation (please refer below) ,as for the suitability of this haptic device, do you think it is better for it to be attached at the user body or can be separated as handphone?

Yeah, you maybe can create your creation watch that can vibrate? Or bracelet? anything can. In China, Malaysia and any country, the products got exists already. For example, when in the restaurant, the Deaf person work as waiter, a custromer call him, but he don't hear. But, got provided call button machine, can press it. The waiter who wear watch make vibration, and can see what number table on his watch.

As additional point, please help by giving more opinion or suggestion regarding this matter

Maybe you never see existing products, you suggest go to check at http://www.dibcoffeesofhawaii.org/Home_Page.php Deaf staffs got wear the watch make vibration... And see my review at http://deafboleh.blogspot.com/2012/07/deaf-in-business-coffees-of-hawaii-2.html And you can visit KFC at Sentul, some Deafs who manage KFC there. You can try there.

Number of daily responses