

# Smart phone Application using Morse Code and Inaudible Frequency

Poonam Y. Pawar

Department of Information Technology,  
STES's Sinhgad Academy of Engineering,  
Kondhwa (BK), Pune-48, Maharashtra, India

Dimple S. Bhansali

Department of Information Technology,  
STES's Sinhgad Academy of Engineering,  
Kondhwa (BK), Pune-48, Maharashtra, India

Sandhya R. Borate

Department of Information Technology,  
STES's Sinhgad Academy of Engineering,  
Kondhwa (BK), Pune-48, Maharashtra, India

Poonam V. Deokate

Department of Information Technology,  
STES's Sinhgad Academy of Engineering,  
Kondhwa (BK), Pune-48, Maharashtra, India

**Abstract-** In this paper, the wireless communication using Morse code and inaudible frequency has been discussed. The application of this project is to transfer the limited information with the help of inaudible frequency and AAC. It is developed for Android smart phone. If user ever in a survival situation where phone service is not an option, can still use your phone to communicate over long distances with this application. The function of this application is to help the large number of users while roaming in the mall areas where network signals are the big issue. This application will assist the user in communication even though the signals are weak.

**Keywords—** Morse Code, Augmentative and alternative communication (AAC), Inaudible frequencies

## I. INTRODUCTION

The need of this application is to provide the facilities to the user where he has very poor network. The application will be beneficial to the users at the time of roaming in the malls, shopping complexes etc. where it is very difficult to find out what is where. This application will be helpful to the people visiting the malls, Mall vendors. The mall vendors can display their advertisements related to the products present in the mall. This will guide the use, makes shopping reliable and saves the time. The malls are the huge areas. It is not easy to find required things as the malls are huge in size. The application works on Android platform which is very secure.

The world is changing constantly. In past days, if a person wants to buy anything, he has to travel miles and miles. But now situation has been changed. A person can get many things under the one roof. Mall is the best option for the same purpose. The mall vendors were having the problems regarding the space for the advertisement. This application solves this problem. Now there is no need to put big hoardings, flexes etc. The space consumption has been decreased. Even the sell turnover can be increased rapidly.

## II. PROJECT INSPIRATION

Gaining technical skills and become expertise in smart phone application domain is the main objective behind the development of this project. The concept of wireless communication using Morse code has been inspired by the Morse. Morse code can be transmitted as a tone-silent time series among other methods [2]. A dot, represented as a short beep, or a dash, represented as a longer beep, are defined as tone intervals (switch down) [2]. A dot-space, which is a short pause between dots and dashes, a character space, which is a longer pause between characters, and a word-space, are defined as silent intervals (switch up). Subsequently, Morse code is simple, and can be transmitted using just a single switch. Morse code is still commonly used in radio communications. It is about 50 times more efficient at transmitting a signal than SSB (a common voice mode) [2].

Unit	Measure
Dit	1 unit of time
Dah	3 units of time
pause between letters	3 units of time
pause between words	7 units of time

(i) Representation of Dit and Dah in Morse Code

### III. PROBLEM DESCRIPTION

The project serves the reliable and efficient application to get offer information available in shops to the customers in mall area. This is client-server application, where the client could get the various offer Advertisements that exist in current mall Shoppe on Android smart phones.

When starting this project, main requirements are:

- a) must work on currently shipping Android smart phones.
- b) must be fast. The pairing process is the gateway to the app itself and must be as unobtrusive as possible.
- c) should not use GPS or other location services.

It might seem tricky to get smart phones to detect each other, but in fact very little information needs to be exchanged to accomplish the pairing. It is sufficient to bootstrap the connection by exchanging a small "token". Once this token has been received, traditional TCP sockets can be used to finalize the pairing. Due to limitations with Android API, Bluetooth is ruled out; and NFC is only available on a few Android phones. When thinking about I/O on modern smart phones If we are going to use sound waves to carry our token, then we better make sure that it is silent. The limit of human hearing varies with age and degrees of hearing damage, but anything above 19 kHz is either inaudible or barely audible. This establishes the lower frequency bound for our system.

### IV. SYSTEM DESIGN

#### A. Client Design

An Android program is developed and installed on the mobile phone [1]. The program has an easy-to-use GUI that is developed using the Eclipse. The program can run on any Android -enabled mobile phone [1]. The client or the user can download the application on his android phone, if he gets the notification. After download process has been completed, the application will ask the user to select the desired preferences such as clothes, food, electronics. The user will send the request. The client can get advertise of offers available in mall regarding to specific category. The client can request for detail information.

#### B. Server Design

A server is implemented to generate inaudible frequency from the text and viceversa. The server does the multiple tasks. The Server senses Android smart phones within mall area and sends request to download application. The server process request and responds to client request.

The server is responsible for maintaining the data of vendors as well as record of advertisement. First of all, when server notifies the client to download the application, inaudible frequency will be converted to the text. When the user request arrives at the server side, the text is converted to inaudible frequency.

#### C. Database Design

A database is needed on the server side to store the information of clients, mall vendors and advertisements. The data related to the vendor can be managed such as adding new vendor, deleting existing one, updating. The same operations can be done on advertisements and clients. SQLite is used as a back-end database [1].

### V. FEATURES OF THIS APPLICATION

- a) It is cheap to set up the equipment needed to work it.
- b) Only trained individuals can understand the message making secure.
- c) Easy to operate and maintain.
- d) Android features for communication makes it reliable.
- e) Use of Morse code makes it more cost efficient.
- f) Reduces additional cost of devices.

## VI. APPLICATION SCOPE

A system like this will be useful in number of applications such as malls, shopping complexes etc. The concept of this application can be implemented in disaster recovery. The concept of this application can be used along with suitable location-based services to keep a track of nearby shopping areas This concept will prove to be quite useful in hilly areas where natural hazards occur frequently.

## VII. CONCLUSION

Nowadays, the use of only Morse code may not be obsolete. The poor network obstructs the user while communication. The use of Bluetooth, GPRS is not reliable, economical and efficient. So an inaudible frequency has been used.

The inaudible frequency reduces the cost of transmission. It will be proven very efficient in case of emergencies. The concept has been developed on Android smart phones. The application could be developed on other operating systems in future.

## ACKNOWLEDGMENT

This work is supported by S.T.E.S.'s Sinhgad Academy of Engineering. We are thankful to Dr. A. G. Kharat, Principal, Col. Prof. O. P. Misra & Dr. C. B. Bangal, Vice Principal, Prof. A. N. Adapanawar, HOD-IT and Prof. S. L. Bangare for their support and guidance.

## REFERENCES

- [1] Lauren Darcey, Shane Conder android wireless application development, volume- II, third edition, 2012.
- [2] C.-H. Yang, C.H.Luo, Y.L.Jeang& G.J. Jon," A novel approach to adaptive Morse coderecognition for disabled persons",2000 IMACS. Published by Elsevier Science B.V.
- [3] United States Patent,Patent o. US 6,418,323 B1,July 2002, "Wireless Mobile Phoe and Morse code with related capabilities", Walter G. Bright, Eric Engstrom, WA(US).

## AUTHORS PROFILE

**Poonam Y. Pawar**

Assistant Professor,  
Department of Information Technology,  
STES's Sinhgad Academy of Engineering,  
Kondhwa (BK), Pune-48, Maharashtra, India.

**Dimple S. Bhansali**

Student of Department of Information Technology,  
STES's Sinhgad Academy of Engineering,  
Kondhwa (BK), Pune-48, Maharashtra, India

**Sandhya R. Borate**

Student of Department of Information Technology,  
STES's Sinhgad Academy of Engineering,  
Kondhwa (BK), Pune-48, Maharashtra, India

**Poonam V. Deokate**

Student of Department of Information Technology,  
STES's Sinhgad Academy of Engineering,  
Kondhwa (BK), Pune-48, Maharashtra, India