Hand-to-Hand Instant Message Communication: Revisiting Morse Code

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Abstract

In this paper, we show a novel vibration-based communication framework for Bluetooth-prepared mobile phones. Cell phones are routinely utilized through the display; then again, as some time users clients might need to exchange pieces of data with adjacent associates, without moving their focus from current task. Besides, this engages communication in cases without visual or sound contact. Consequently, we implement up a novel application called Hand-to-Hand on Bluetooth Communication (H2BCom). We use the ordinary movements of tapping and touching the mobile phone display for sending a Morse coded message over a Bluetooth channel. At the side of receiver, the Morse coded message is presented as vibration of the Smartphone. We show the configuration i.e. design, implementation and assessment of H2BCom on Android phones. In the user study, we found that utilizing the Morse code was troublesome for beginners, yet the users' skill enhanced in the wake of taking an instructional exercise of the Morse code.

Keywords: Haptic communications and feedback, vibration-based communications, instant messaging, Morse code, Smartphone's

I. INTRODUCTION

Accompanied by the rapid growth of information technology engineering, android mobiles are now used widely in a variety of fields. Applications of mobile and various software in guidelines, training, teaching, learning, and computer oriented instruction are a major future trend. However, many applications are designed for normal persons, but they are inaccessible to people living with disabilities, unless extra adaptive tools and interfaces were designed for them to use the aplications. Lots of experiment has been done on BLIND person, to provide them an effective way of communication. Our application works on VIBRATIONS series. It is an application (app) for Android phones, which gives tactile input to the user. The application converts the incoming text message into Morse code. Sensing vibrations of short and long duration to represent dots and dashes, the blind user is able to read the SMS. Any Android keyboard can be used in replying, but in our opinion the one that will work best for a blind user .There were many other ways by which a blind person can communicate such as using text-to-speech and speech-to-text technique.But it's not so flexibile as its time consuming and error prone.

There are many existing applications for blind person which will help them for communication in there day to day life. But all the current applications are not that precise and effective .Hence, the main aim of our application is to provide flexible way for bi-directional communication. The main feature about our application is to make the blind person self-dependent and to provide a proper and effective means of communication thus mobile plays an important role when communication is considered.As android is famous and most commonly used O.S for mobile phones it will add more flexibility to our project .

II. LITERATURE SURVEY

A. Paper Name Pressages: Augmenting Phone Calls with Non-Verbal Messages

Authors: Eve Hoggan1, Craig Stewart, Laura Haverinen1, Giulio Jacucci1 and Vuokko Lantz
Description

ForcePhone is a mobile synchronous haptic communication system. During phone calls, users can squeeze the side of the device and the pressure level is mapped to vibrations on the recipient's device. The pressure/vibrotactile messages supported by ForcePhone are called pressages. Using a labbased study and a small field study, this paper addresses the following questions: how can haptic interpersonal communication be integrated into a standard mobile device? What is the most appropriate feedback design for pressages? What types of non-verbal cues can be represented by pressages? Do users make use of presages during their conversations? The results of this research indicate that such a system has value as a communication channel in real-world settings with users expressing greetings, presence and emotions through pressages.

B. ComTouch: Design of a Vibrotactile Communication Device

Author: Angela Chang, Sile O'Modhrain, Rob Jacob, Eric Gunther, Hiroshi Ishii
Description:

Paper describes the design of ComTouch, a device that augments remote voice communication with touch, by converting hand pressure into vibrational intensity between users in real-time. The goal of this work is to enrich interpersonal communication by complementing voice with a tactile channel. The studies show that users developed an encoding system similar to that of Morse code, as well as three original uses: emphasis, mimicry, and turn-taking. Demonstrates the potential of the tactile channel to enhance the existing voice communication channel.

C. Privacy-Aware Communication for Smartphones Using Vibration

Author: Inhwan Hwang, Jungchan Cho, and Songhwai Oh CPSLAB, ASRI
Description

Paper proposes a novel communication method between smart devices using a built-in vibrator and accelerometer. The proposed approach is ideal for low-rate private communication and its communication medium is an object on which smart devices are placed, such as tables and desks. When more than two smart devices are placed on an object and one device wants to transmit a message to the other devices, the transmitting device generates a sequence of vibrations. The vibrations are propagated through the object on which devices are placed. The receiving devices analyze their accelerometer readings to decode incoming messages. Unlike radio-based wireless communication where eavesdropping of private communication is possible without the knowledge of the user; the proposed method can guarantee privacy as long as the object used for communication is secured. The proposed method is implemented on Android smartphones and comprehensive experiments are conducted to show its feasibility.

D. Smart-Its Friends: A Technique for Users to Easily Establish Connections between Smart Artefacts

Author: Lars Erik Holmquist, Friedemann Mattern, Bernt Schiele, Petteri Alahuhta, Michael Beigl and Hans-W. Gellersen
Description:

Ubiquitous computing is associated with a vision of everything being connected to everything. However, for successful applications to emerge, it will not be the quantity but the quality and usefulness of connections that will matter. Our concern is how qualitative relations and more selective connections can be established between smart artefacts, and how users can retain control over artefact interconnection. We propose context proximity for selective artefact communication, using the context of artefacts for matchmaking. We further suggest empowering users with simple but effective means to impose the same context on a number of artefacts. To prove our point we have implemented Smart-Its Friends, small embedded devices that become connected when a user holds them together and shakes them.

E. Touch-and-Connect: A Connection Request Framework for Ad-hoc Networks and the Pervasive Computing Environment.

Authors: Yohei Iwasaki, Nobuo Kawaguchi, Yasuyoshi Inagaki
Description:

The spread of short distance wireless communication technology is making it possible for various information appliances to communicate through a network. However, to connect and to use them, we must generally perform complicated setup operations such as setting addresses or names. The paper proposes a user-friendly connecting management framework called "Touch-and-Connect". With this method, we can connect any networked devices only by touching them. This system is designed so that it can work without a server, and even if many individuals operate it independently, no incorrect connections occur. And we have exemplified the usefulness of this framework with subject experiments.

III. PROPOSED SYSTEM

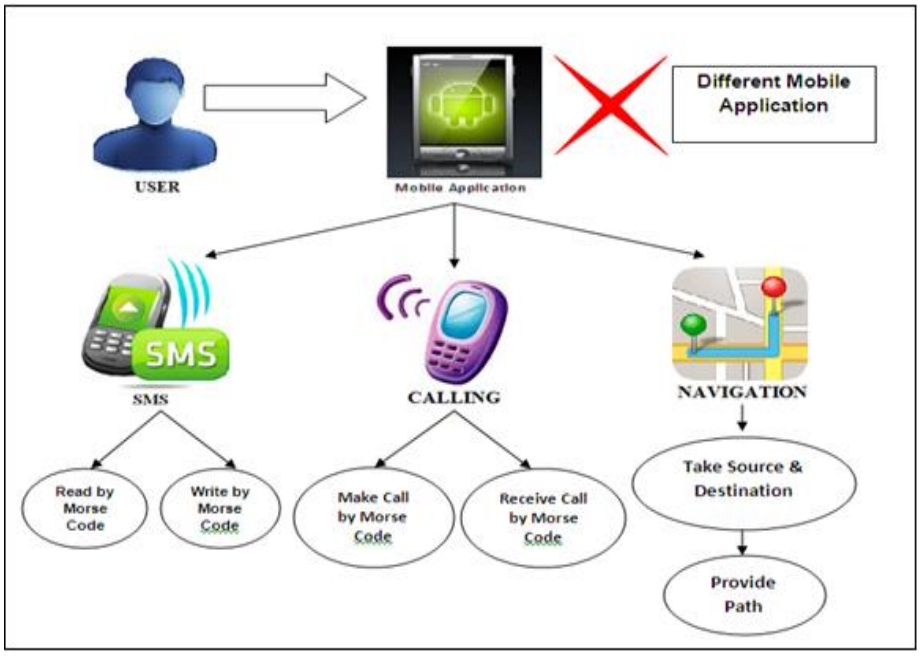

Fig. 1: Proposed System Architecure

We are going to develop an android application using Morse code for deaf blind people using which they can handle touch screen android mobiles. They can be independently make calls, receive calls, type in messages, send messages, add / delete / edit / retrieve contacts in same way as normal human beings. They can also reach at their destination without taking help of any person by using navigation provided in android application. If they forget the path in between they came to know it again using Morse code vibrations in android phone.

We are going to develop an android application using Morse code for deaf blind people using which they can handle touch screen android mobiles. They can be independently make calls, receive calls, type in messages, send messages, add / delete / edit / retrieve contacts in same way as normal human beings. They can also reach at their destination without taking help of skilled listener or observer without special equipment. It thus, is ideal method of information transmission for text disabled. In place of dots and dashes of the Morse code, it uses short vibration and long vibration. Duration period of long vibration is three times the 2 short vibrations. Each vibration is followed by a silence which is equal to one short vibration of device, i.e., a dot format.

IV. IMPLEMENTATION MODULES

A. Data Management:

- Letter corresponds to one alphabet symbol which can be mapped to the Morse code.
- Word corresponds to our daily-life English-language word.
- Sentence is a chunk of words that are sent from a sender to a receiver at one time. It can be an ordinary sentence.

B. Sender's Behavior:

The application waits for a touch action, which is expected to be a short touch, a long touch or a swipe. The short and long touch are automatically converted to a dot and a dash, respectively, but a swipe indicates the end of a word.

Thus, we use an explicit delimiter for a word in the current implementation. Also the end of a sentence is specified by a swipe followed by a long touch, which triggers transmission of the sentence to a receiver. In this sense, the Morse code is only used for distinguishing between a dot and a dash at the sender side and we call this coding, pseudo-Morse code.

Senders can check their input from feedback provided by the system. The feedback of the hand-to-touch interface is vibration and/or sound. If the senders realize any wrong input, they can correct the input by deleting letters or words.

C. Receiver's Behavior

In H2BCom, the sense of "touch" is used to interpret the information through vibration patterns and there is a large possibility to misinterpret the information. Therefore, error control at the vibration-to-hand interface is important.

In our implementation, we leave the issue of error control to the users. More specifically, when a user cannot understand the received sentence completely, he/she can replay the sentence. If necessary, the speed of vibration can be reduced. Thus, in principle, the same sentence is played unless the user explicitly proceeds to the next sentence. At the data layer of receiver side, RSB is managed by the current read pointer which is incremented by the user's instruction. If RSB is full, the receiver notices the sender by sending acknowledgement with overflow signal.

V. CONCLUSION

The System, which we are developing, is in need for deaf and blind people to use the touch screen Android based mobile phones. This system is very helpful for blind and deaf person. Using this system they can communicate like a sighted person. It allows visually impaired & hearing impaired individuals to send and to read text messages from their phones. This project is helpful in creating a tiny window into a dark and silent world of deaf-blind to find ways for them to communicate, to access and produce a variety of useful information via smart phones.

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