

# Chapter 14

## MorseEx: A Communication Application for the Deaf-Blind

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### **ABSTRACT**

*MorseEx uses Morse code, which allows partially visually impaired and hard of hearing people to chat with others. In Morse code, letters are represented as a combination of dots and dashes. The person inputs a dot by tapping on the left of the screen, dash by tapping on the center of the screen to form a message, and tapping on the right will separate letters of the message, and tapping it twice sends the message. This message will be saved to the database and then converted to a normal text message to receive by people who do not have any impairments. On the other hand, people with no impairments have to type and send text messages. For this message to be understood by the visually and partially impaired, a dot will be produced as short vibration and a dash will be produced as long vibration. The model will be developing an Android mobile application using Android studio and Firebase database to store user information. The aim is to contribute to society in any way possible.*

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## **INTRODUCTION**

Communication is an extremely vital part of everyday life. Being able to communicate effectively is one of the most important life skills. But something as trivial as communication seems very difficult for people who are visually or hearing impaired. They face multiple challenges every day of their lives and one of them is communicating their thoughts and opinions effectively. When people with good intentions convert to a slow manner of speaking, instead of assisting the hearing challenged, they make it more difficult for them to read lips. Hearing challenged persons have learned to understand words when others talk normally over time, thus purposely slowing things down can lead to misinterpretation. The absence of light makes it difficult for the hearing impaired to engage with people, whether in a poorly lit room or a boisterous dark club. They rely on visual stimuli to communicate, such as lip reading or sign language, therefore darkness is a problem. Various studies have found that deaf persons are roughly twice as likely to suffer from psychological issues as hearing ones. Here's where you'll find the appropriate financing source. If there are none, delete this. despair and anxiety, for example. This, according to research, stems from emotions of isolation. Worse, talking with a therapist is usually the most effective solution for these types of difficulties. Of course, finding a doctor or therapist who has the skills and experience to work effectively with people who have hearing problems is not straightforward. When it comes to the visually impaired, it is easy for them to read braille but when it comes to expressing their thoughts without verbal communication, not every person can understand braille. Even though technology is extremely advanced these days and speech-to-text conversion solves a lot of problems, it is not always possible to do it depending on the circumstances and the environment the person is in. This is where Morse Code comes in.

Morse code is indeed a telecommunications method for encoding characters as two-second signal sequences in the form of dots and dashes, or dits and dahs. The initial Morse Code is known as the American Morse Code since it was invented in America. The International Morse Code for languages that also utilize the Latin Alphabet, the Japanese Wabun Code, and the Korean Morse Code are only a few of the current Morse Code variants (SKATS). It was created by Samuel Finley Breese Morse. No distinction is made between capital and lowercase letters. A series of dots and dashes make up each Morse code symbol. The basic unit of time measurement in Morse code transmission is the duration of a dot, while the duration of a dash is three times that of a dot. Each dot or dash in a character is followed by a gap, which denotes a period of silence equal to the length of the dot. A space of duration equal to three dots separates a word's letters, and space of duration equal to seven dots separates words. Morse code is frequently delivered at the fastest rate the recipient can decode since its elements are proportionately stated rather than having set time lengths. The Morse code transmission rate is a unit of measurement that is expressed in groups per minute. An information-carrying medium that is switched on and off, such as electrical current, radio waves, visible light, or sound waves, is commonly used to transmit Morse code. It is simpler to differentiate between dots and dashes since the current or wave is present throughout the duration of the dot or dash but not in between.

People who have received the necessary training can directly decipher Morse code signals in a format that is perceptible to human senses, such as sound waves or visible light, and they can also directly analyze Morse code signals in a format that is perceptible to sensory organs, such as vibrations or visible light (Landicho, 2016). Morse code usually works with vibrations which are divided into short vibrations and long vibrations. The short vibration is used to indicate that the Morse code of a particular letter is finished whereas the long vibrations suggest that the whole word is completed and the next word will

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