



Speech Recognition Security System

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Abstract - This paper presents the generic process of speech recognition system and how it can be implemented in designing a security application that can be used in our smartphones as a substitute for various security applications like traditional password systems such as pattern and numeric. The motivation behind this paper is to present simple implementation of speech recognition system in an application that will unlock only when it recognizes the voice password spoken by speaker or password holder.

Speech or speaker recognition is the ability of a machine or program to receive and interpret dictation or to understand and carry out spoken commands. It works by recording a speech sample (“voiceprint”) of a customer and Speech authentication is more secure than other authentication methods because it uses a person's unique voiceprint to identify them. This means

someone else can't use your voiceprint to access your account, unlike other biometric identifiers. Mobile security threats are on the rise Mobile devices now account for more than 60 percent of digital fraud, from phishing attacks to stolen passwords. Using our phones for sensitive business such as banking makes security even more essential and to solve this issue, we have developed a smartphone application. and you can use speech recognition app for other purpose also like You can use speech recognition to control a smart home, instruct a smart speaker, and command phones and tablets. In addition, you can set reminders and interact hands-free with personal technologies. The most significant use is for the entry of text without using an on-screen or physical keyboard.

Keywords – Speech Authentication, Need of Speech Recognition, proper notes, Speech Security.

I. INTRODUCTION

Speech recognition methods can be divided into text-independent and text dependent methods. In a text independent system, speaker models capture characteristics of somebody's speech, which show up irrespective of what one is saying. In a text-dependent system, on the other hand, the recognition of the speaker's identity is based on his or her speaking one or more specific phrases, like passwords, card numbers, PIN codes, etc^[4].

Speech is a means for sharing Information and Ideas. Speech is a way through which one verbally expresses what is going in one's mind. It is the most fundamental form of communication among humans. Speech Recognition is an interdisciplinary subfield of computer science and computational linguistics that develops methodologies and technologies that enable the recognition and translation of spoken language into text by computers with the main benefit of searchability. It is also known as Automatic Speech Recognition (ASR), Computer Speech Recognition or Speech to Text (STT). Speech recognition software on computers requires analog audio to be converted into digital signals, known

as analog-to-digital (A/D) conversion. For a computer to decipher a signal, it must have a digital database of words or syllables as well as a quick process for comparing this data to signals. The speech patterns are stored on the hard drive and loaded into memory when the program is run.

II. THE GOALS AND SCOPE OF THE PROJECT

The main objective of this project is to design a **Speech Recognition Security System**. This project is mainly used for security purpose to identify the speech password spoken from the authorized person and the system opens when the password is correct. The function of this speech recognition security system is to have a system that will only unlock upon recognizing a speech password spoken by the administrator or password holder.

IV. STUDIES AND FINDING

In this research study, five research questions were formulated. The findings will thus be discussed in the context of the research questions.

RQ1: How does speech recognition work for security?

Speech authentication is a method of biometric identification that uses the unique characteristics of a person's speech to verify their identity. Speech authentication compares a speaker's speech with a database of recorded speech to determine whether or not it matches an existing voiceprint. In some cases, speech authentication can also be used to verify that two people are speaking in unison; this makes it useful for applications like remote collaboration and other communication systems where the parties involved need to be sure that they're speaking with one another and not someone else pretending to be them.

RQ2: What are the challenge of data privacy and security?

Another barrier that causes hindrance in the development and implementation of speech tech is the security and privacy-related issues attached to it. A speech recording of someone is used as their biometric data; therefore, many people are hesitant to use speech tech since they do not want to share their biometrics. For instance, the market for smart home devices is rising rapidly.

According to NPR, every 1 in 100 INDIAN has a smart home device in their homes. Brands such as Google Home and Alexa collect speech data to improve the "accuracy" of their devices, or so they claim. And this makes data collection necessary for improving their product's performance. Some people are unwilling to let such devices collect their biometric data since they think this makes them vulnerable to hackers and other security threats.

RQ3: What are the key components used in speech recognition?

Speech recognizers are made up of a few components, such as the speech input, feature extraction, feature vectors, a decoder, and a word output. The decoder leverages acoustic models, a pronunciation dictionary, and language models to determine the appropriate output.

RQ4: What kind of signal is used in Speech recognition?

Designed for that purpose, without the use of a human or artificial speech acoustic signal means a coder sound signal which is released and transmitted by a device.

RQ5: What are the benefits of speech recognition software?

The benefits of speech recognition software are that it provides a faster method of writing on a computer, tablet, or smartphone, without typing. You can speak into an external microphone, headset, or built-in microphone, and your words appear as text on the screen. Many businesses and organisations are adopting this new way of working to improve their internal processes, increase productivity, and above all, save time.

- **INCREASE PRODUCTIVITY**

Many organisations, such as those in the healthcare and legal sectors, can benefit from speech recognition. A speech recognition system will often be used to support with task-management duties, such as setting up calls, scheduling meetings, and taking notes. With the development of speech recognition, it is now possible to capture speech much faster than you can type, which results in increased productivity.

- **IT SAVES YOUR TIME**

One of the main advantages of speech recognition is that it will save your organisation precious time that can be used on more demanding tasks. A modern speech recognition system will enable you to be much faster and more accurate with text outputs than you could be typing on a keyboard. Furthermore, you can easily access digital dictation systems through mobile phones and other mobile devices, which makes it easier to use speech recognition technology in different business settings.

RQ6: what are the major challenges with speech recognition?

- The challenge of accuracy. The accuracy of a speech recognition system (SRS) must be high to create any value.
- The challenge of language, accent, and dialect coverage.
- The challenge of data privacy and security.
- The challenge of cost and deployment.

V. CONCLUSION

Speech recognition will revolutionize the way people conduct business over the Web and will ultimately differentiate world class e-business. Voice XML ties speech recognition and telephony together and provides the technology with which businesses can develop and deploy voice - enabled Web solutions TODAY! These solutions can greatly expand the accessibility of Web - based self-service transactions to customers who would otherwise not have access and at the same time leverage a business' existing Web investments. Speech recognition and Voice XML clearly represent the next wave of the Web. In near future people will be using their home and business computers by speech not by keyboard or mouse. Home automation will be completely based on speech recognition.

VI. REFERENCE

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