

RaitaSnehi - A Voice Based Farmer Information System

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DOI: <https://doi.org/10.26438/ijcse/v7i6.347352> | Available online at: www.ijcseonline.org

Accepted: 11/Jun/2019, Published: 30/Jun/2019

Abstract— India is a nation with more than half of its citizens dependent on agriculture for its survival, but only uses 14 percent of its GDP contribution. The nation has divided portions of land, resulting in a significant number of individual farmers with a nearly stagnant productivity. Despite government actions at both the center and the state level, a gap between land and labor continues. With over 80% of the entire land holdings of tiny and marginal landowners, Karnataka is no exception. The search engine researchers have focused their efforts for years and years on having search engines that are more accurate and faster. In the past, this was more than enough, But the concept of getting everything intelligent became with smart phone appearance.

In this paper we attempted to implement a proposed model of a voice-based farmer information system called ("RaitaSnehi") that provides data on the various schemes that farmers can get from various websites. Based on choices that farmers need to know, the user is prompted to give voice input. The word recognition algorithm is then applied using the Python environment and the recognized word is searched from the website in the parsed data and the details of the required data are read out on demand to the farmer. The word recognition algorithm is implemented, which is the template-based comparative algorithm based on hidden markov model, and the results are checked for accuracy. The words are given in the language of Kannada and the results are obtained in the language of Kannada to make the farmers comfortable. Python translation tool is used to convert English to Kannada and when reading from web sources, these words are converted to text to voice in Kannada Language. Through the document we will explain each portion of the proposed model in detail.

Keywords— Speech Recognition, Hidden Markov Model, Natural Language Processing, Kannada Voice Output .

I. INTRODUCTION

Contribution of agriculture to India's general gross domestic product (GDP) fell rapidly from 30 percent in 1990-91 to just 13.9 percent in 2012 (State of Indian Agriculture, 2011-2012). However, our country's agricultural area remains the backbone as it employs 52 percent of its workers. Spoken queries are a natural means of searching the web in settings where it is not practical to type on a keyboard. Also with users' recent expectations about the nature of the services through steady access to internet data and services. Given the nature of the delivery systems and wider variety of utilization situations, speech technology has become increasingly important as part of any type of activity to accommodate user requirements for omnipresent mobile access any moment, any location, any usage scenario.

While on (2009), In combination with Google Android OS 2.0, a multi-modal UI called Google Maps Speech or Text Navigation as input and maps as output was published. This

version of the scheme exceeds its earlier one by incorporating voice instructions, traffic reports, and street view support.

In the Middle East, many Arab revolutions erupted in 2011. These developments have resulted in the use of search engines has increased dramatically, Google in particular. Throughout this period, Google is representing the Release of news via tabs and smart phones to all Arabian people. It was natural to be in a heated discussion about what they said or Even on social networks like Facebook or Twitter about politics and certain characters, and you are required to provide evidence on your claims (e.g.: YouTube video files or images).

From here, the scholar felt the need for a mobile phone intelligent voice search engine scheme. This system works as a personal assistant who can automatically search Google and hasn't waited for you to ask, you can believe of it as a genius that will transform your lecture into articles and videos.

First, the suggested system required to acknowledge your voice using speech recognition and speech recognition methods, and then start searching through Google Search for you recognized queries.

The rest of this paper is set up as follows, section II proposes the related work, section III proposes the design of the proposed system, section IV proposes the Implementation work, section V presents experimental results conducted Finally, the section VI concludes with conclusion and future scope.

II. RELATED WORK

With the fast rise in web content, text-based recovery of data has become very powerful technology with lot of successful apps, that has created a productive sector nowadays. This is not the end of the tale, though, but just the beginning. Though increase in bandwidth of Internet, the decrease cost of database, and in rapid growth of multimedia techniques paved the way for even more multi-media content on the network. Multi-media information generally holds speech data, and it generally informs the multimedia content appropriate subjects and ideas. As a outcome, voice data became a key to Parsing and extraction such information [1].

Database development (training) and recognition procedures are engaged in speech recognition. Database development explains the collection of speech samples from speakers and the retrieval of characteristics for chosen phrases. And recognition is a method to detect the spoken word by comparing present audio characteristics to pre-stored audio features[2]. Shumaila Iqbal, Tahira Mahboob and Malik Sikandar's precision of identification was observed to be 86.67 percent in some other survey of voice recognition using HMM with MFCC for safe ATM [3]

In reality, although access to network information is mainly text-based nowadays, most of the functions of messages can be achieved by voice. Not only can voice data be used for parsing and extract the multi-media information, but consumer information and requests can be also entered in the form of a speech[4].

With the many handheld devices with commercially accessible multimedia functionalities and the fast-growing numbers of multimedia data over the Internet, this region is obviously becoming more and more crucial today. This leads to the idea of voice-based retrieval of data as shown in the Fig. 1.

Apart from using the text guidelines / questions for collecting text records as is much more popular nowadays, either guidelines / questions or content that is needed to be

extracted, or both, both can be in voiced format. In fact, this involves 3 distinct roles:

- (1) Use of the text questions to obtain voice records.
- (2) Use of the voice questions to obtain text records, and
- (3) Use of the voice questions to obtain voice records.

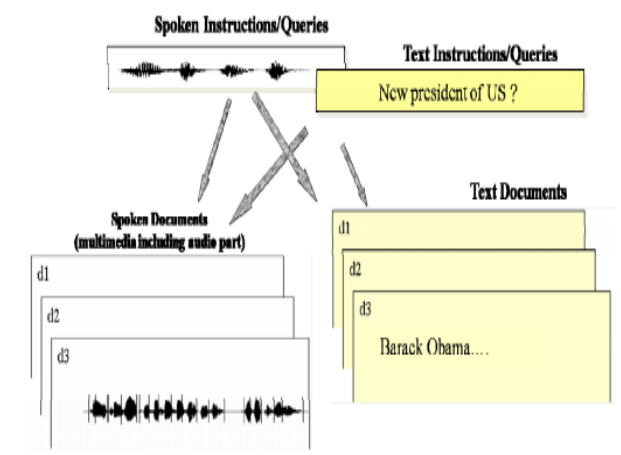


Fig. 1. Speech-based data retrieval: customer guidelines / requests can be in voice format and/or records to be obtained in voice format.

III. DESIGN OF PROPOSED SYSTEM

The Kannada word is translated to English as the first step before the search is started . The word is searched in the web resources and the results obtained are again translated to Kannada and text to voice conversion is carried out. Fig. 2 shows and explains the block diagram of proposed system.

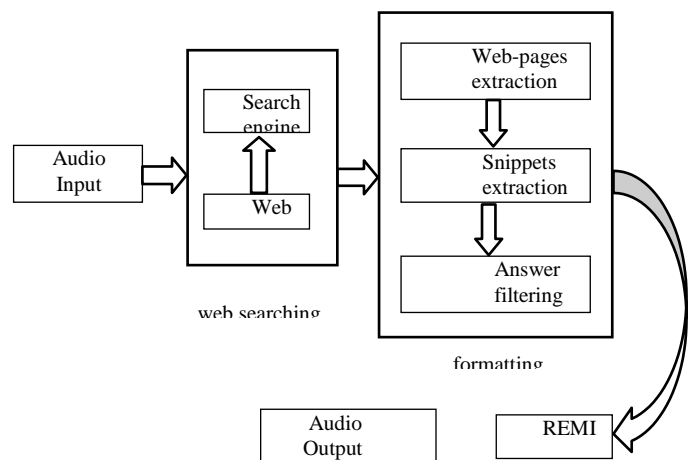


Fig. 2. Proposed System

1) Speech to Text conversion:

The speech to text conversion is providing the input in the form of speech and receiving the output in text format. This is done using a python googletrans package. The translated text is sent to the user interface for searching the valuable data.

2) Web pages extraction:

The user initially asks the question in the user interface. The question will be connected in this module and then searched in the Google search engine. When searched, valuable information will be extracted from web pages and a dialog box will appear in the user interface

3) Snippets Extraction:

The snippets are extracted from the retrieved web pages using the indexing technique and stored in the local files. Using line separators, snippet lines are separated as a single line for each link in web pages. Only the desired information will be stored and retrieved in the web pages. All unwanted information such as web links, pictures, and videos will be removed.

4) Answer Filtering:

Answer filtering is a process of filtering the accurate answer from the extracted web snippets for a given query. The NLP technique is used to filter the relevant response from the web snippets extracted. This module identifies the response from the snippets extracted from the web pages of Google and then removes all the stop words in the questions. By comparing all the related snippets with the question, the snippet will be filtered and displayed as the relevant answer when a large number of words are matched. The snippet will then be shown to the user in the specified response window.

IV. IMPLEMENTATION WORK

If you want to search the internet as normal, simply just make use of famous search engines such like GOOGLE and YAHOO and enter your request in the search field then click enter to search and you will discover what you actually needed. If you got tired with typing or phone touch-screen issue, you can search by giving voice input using GOOGLE. Fig. 3 shows the figure of how the Voice based information system of a farmer is been implemented.

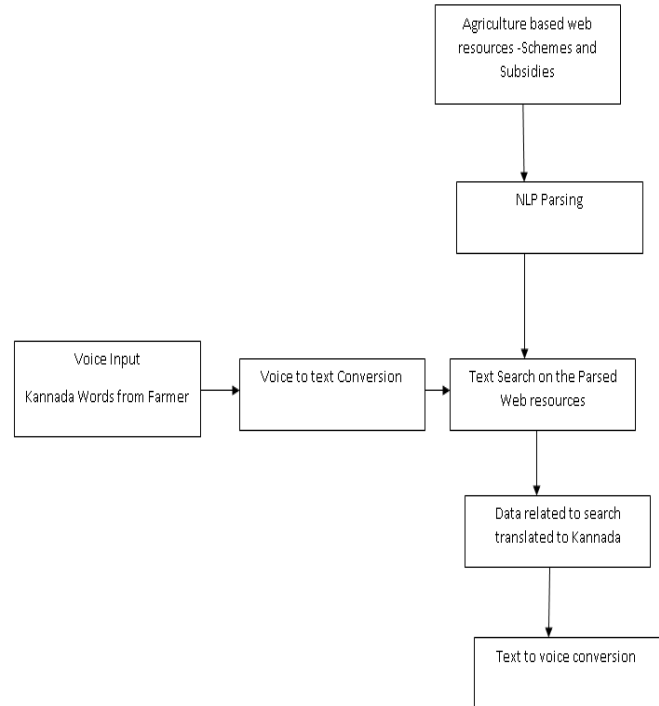


Fig. 3. Implementation model

The implementation of a voice based farmer information system consists of several steps as explained below,

Step 1: The user is prompted to give voice input on the basis of choices that farmer needs to know. Then the word recognition algorithm is applied using the Python environment and the recognized word is searched in the parsed data from the website and the details about the needed data is read out to the farmer on demand.

Step 2: The word recognition algorithm which is the template based comparative algorithm based on hidden markov model is implemented and the results are checked for accuracy.

Step 3: The Kannada word is translated to English as the first step before the search is started. The word is searched in the web resources and the results obtained are again translated to Kannada and text to voice conversion is carried out

Step 4: Python based libraries for parsing and translation is used to carry out the process. The word once found would be converted to voice and played.

Various packages used in tool for implementing the Voice Based System are:

1. gTTS.
2. SpeechRecognition.
3. PyAudio.
4. Remi.
5. googletrans.

ಪ್ರಧಾನ ಮಂತ್ರಿ ಮುದ್ರಾ ಧರಣಿ (ಮುಂದಕ್ಕೆ) ಯೋಜನೆ - ಮುದ್ರಾ ಧರಣಿ ಯೋಜನೆಗೆ ಒಂದು ವಾರದ ಹಿಂದೆ... (The text continues with details about the scheme and its implementation.)



Fig. 7. Output for Prime Minister Mudra Loan Scheme

The Fig.7. gives the output for the question related to Prime Minister Mudra Loan Scheme.

VI. CONCLUSION AND FUTURE SCOPE

Web and mobile users have been typing a text for centuries and pressing button to figure out what they want or even talk after putting a microphone button. This has been a really nice way in the past but it won't be helpful with the serious modifications in the folk and the absence of time.

Till now only voice call methods are used, that to in English Language. It will be difficult for the farmers to understand English language. So, the scholar attempted to implement a suggested model of a voice based farmer information system called ("RaitaSnehi") is to help farmers to clarify their problem with respect to farming, loans, etc.. Using Kannada language. In the future, the scholar plans to undertake several future research on voice diarization in a multi-model speaker in particular.

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Gourish M Malage received his Bachelor of Engineering from University of Belgaum, India in 2017 and he is currently pursuing M.Tech in Data Engineering and Cloud Computing from REVA University. He has published research papers in reputed international journals including(IRJET and IJARCS). His main research work focuses on Cryptography Algorithms, Cloud Security, Big Data Analytics, Data Mining, IoT and Computational Intelligence based education. He has 3 years of Research Experience.



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