Implementation on Voice Based Search For SQL Query Generation and Performing

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ABSTRACT

In this survey paper the proposed system will been developed to enable secure access of data to a voice-based user interface (UI) by enabling voice-based authentication and integration with an existing Natural Language Processing (NLP) system. In this survey paper work on the voice based SQL query generation. We study the question of how to improve the fetching the results from query results as well as applying the query to the database. Traditional predefined query forms are not able to satisfy various ad-hoc queries from users on those databases. Here, we propose Machine learning based technique to generate the SQL query based on user voice, a novel database query form interface, which is able to dynamically generate query forms.

Keywords: NLP, Languages and compilers, Optimization, Verification, Voice Recognisation, Machine-independent microcode generation.

ARTICLE INFO

I. INTRODUCTION

In other words, NLP is a technique, which can make the computer understand the languages naturally used by humans. In this project, we are translating English query into a SQL query using semantic grammar. The system will accept users query in natural language as an input. The program will check whether the query is valid or not.

Then we will generate tokens by performing the division of the question clause. Each token represents a single word in the users query. The tokens from the query clause are compared with clauses already stored in the dictionary. The dictionary needs to be constantly updated. Then the algorithm scans the tokens and tries to find attributes present in the query. Then we find all the tables in the database which contain the attributes by comparing syntax and semantics. Then we build the final SQL query and execute it on the database and return the result dataset to the user.

Natural Language Processing (NLP) is an area of application and research that explores how computers can be used to understand and manipulate natural language speech or text to do useful things. The foundation of NLP lie in a number of disciplines, namely, computer and information sciences, linguistics, mathematics, electrical and electronic engineering, artificial intelligence robotics, and psychology. NLP researchers aim to gather knowledge on how hu- man beings use and manipulate natural languages to perform desired tasks so that appropriate tools and techniques can be developed. Applications of NLP include a number of fields of study such as multilingual and cross-language information retrieval (CLIR), machine transaction, natural language, text processing and summarization, user interfaces, speech recognition, artificial intelligence and expert systems.

While natural language may be the easiest system for people to learn and use, it has proved to be the hardest for a computer to understand. The goal of NLP is to enable communication between people and computers without resorting to memorization of complex commands and procedures.

II. LITERATURE SURVEY

Natural language processing can be done in two way communication with device one is written communication as well as verbal communication with device written communication is much more easier than the verbal communication. In written communication syntax, semantic, lexical and morphological analysis is done. Whereas in verbal communication includes all the process in written as well as additional process include additional knowledge about phonology as well as enough added information to handle the further ambiguities that arise in speech.

In this paper author represent a method for building a ldquonatural languages interfaces to data basesrdquo (NLIDB) system. [1].

This paper focuses on a simplified Natural Language Processing (NLP) system using Python and Raspberry Pi. Natural language processing systems have been used in a wide range of tech industries ranging from medical, defense, consumer, corporate. Most NLP systems used currently requires a subsidiary processing hardware and a default OS. The system proposed in this paper is a standalone NLP system which is open source and can be accessed in remote locations using a simple hardware component. The processes including voice extraction, speech to text conversion, text processing and database management and speech synthesis have been explained in detail along with the python modules used to build the system. By minimizing the hardware components and using open source software, a universal, adaptable NLP system has been proposed [2].

The paper discusses natural language processing in field of Information retrieval. Natural Language Processing deals with human computer interaction. Natural language processing has a vital role in the field of Information retrieval. The storage and processing of information in response to user's query requires an information retrieval system that processes human or natural language. Various tasks of information retrieval such as Stemming, Lemmatization, POS tagging is discussed in the pape. The implementation of these tasks in Python is illustrated with examples.
The paper explains and implements natural language processing task in Information retrieval. Essentail and preliminary tasks tasks required in almost all information retrieval system is explained with example in the paper. The tasks are performed in Python and with the inclusion of NLTK module. [3].

In this paper proposed system accepts user query in natural language and translate it into SQL query and retrieve result from database. Syntactic parsing, keyword extraction, stop words removal, cooccurrence matrix generation, use of WordNet, stemming algorithm and semantic mapping techniques have been used for formation of the SQL query from natural language input. Developed system gives correct answers of simple queries, queries with logical conditions and aggregate functions. As presented system does not support all forms of SQL queries, further development is necessary.
In this paper author discussed design and implementation of a system using modified word co-occurrence matrix method which will provide access to database using queries in English language [4].

III. PROPOSED SYSTEM

A. Description:
This system has been developed to enable secure access of data to a voice-based user interface (UI) by enabling voice-based authentication and integration with an existing Natural Language Processing (NLP) system.

We address the question of how to improve the fetching the results from query results.

Here, we propose Machine learning based technique to generate the SQL query based on user voice, a novel database query form interface, which is able to dynamically generate query forms.
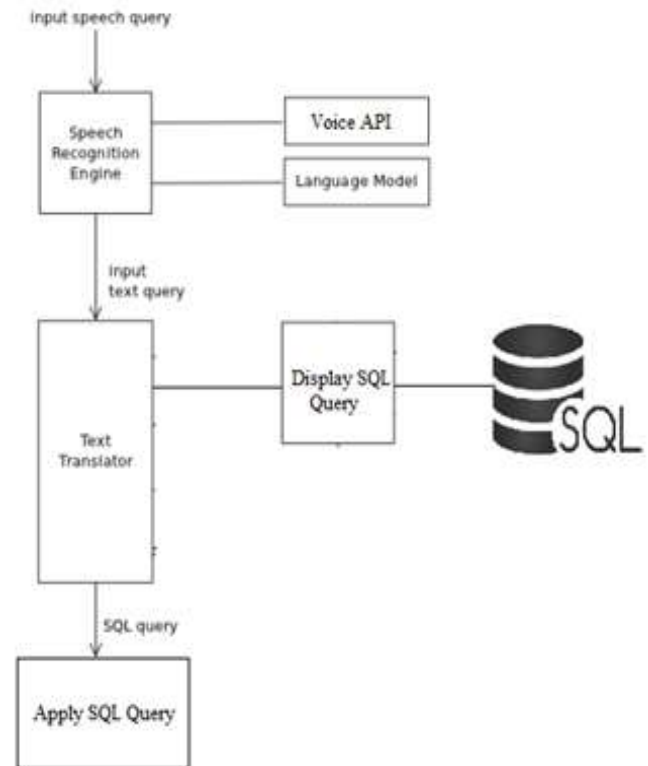

Fig 1. System architecture

B. Mathematical Model:
Input-Output: Mathematical Model
$U= \{I, O, f, S, F\}$
Where,
$I= \{I1, I2\}$
- $I1= \{l1,l2…... ln\}$ where n sql query
- $I2=$ i.e. sql query voice based

$O= \{O1,O2,O3, O4, O5\}$
- $O1=$ Voice process
- $O2=$ Sql Query Generate
- $O3 =$ Apply SQL query
- $O4 =$ SQL query detection
- $O5 =$Voice Generation

$f= \{f1,f2\}$
- $f1=$ preprocess (voice, sql query)
- $f2 =$ analysis (sql query)

S: Success:
- SQL query successfully apply
F: Failure:
- Algorithm not working properly
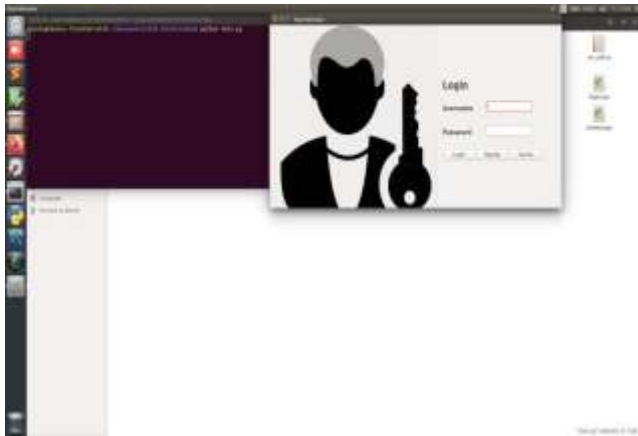- Voice command failure
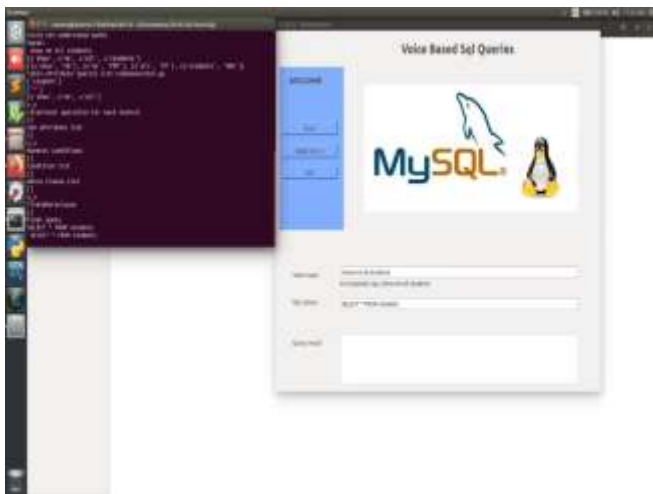
IV. RESULT AND DISCUSSION
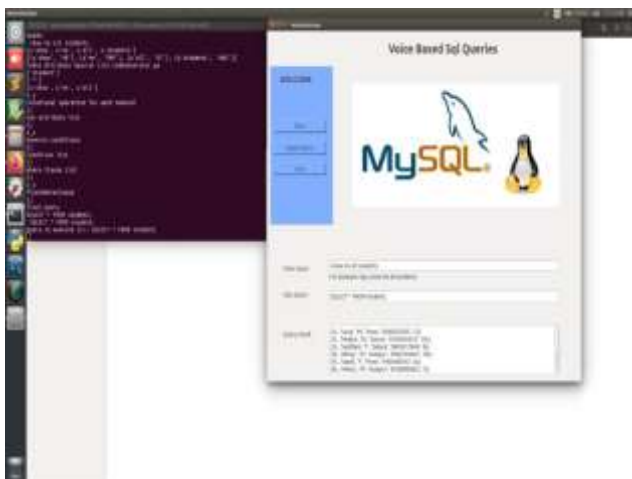
Fig 2. Login Page

Fig 3. Voice Input Query

Fig 4. Query Result

V. ACKNOWLEDGMENT

VI. CONCLUSION

The implementation of the proposed system aims to translate SQL query into speech (voice). The scope of the project is to enhance the recognition capability for various SQL query and achieving more accuracy to generate the Database.

We address the question of how to improve the fetching the results from query results. Traditional predefined query forms are not able to satisfy various ad-hoc queries from users on those databases. Here, we propose Machine learning based technique to generate the SQL query based on user voice, a novel database query form interface, which is able to dynamically generate query forms.

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