Implementation on Voice based Database Access for Non-Technical Users using ML

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Abstract: This system has been developed to enable secure access of data to a voice-based user interface by enabling voice-based authentication and integration with an existing Natural Language Processing system. We address the question of how to improve the fetching the results from query results. conventional predefined query forms aren't capable of satisfy diverse advert-hoc queries from users on those databases. Here, we propose a machine learning-based technique to generate the SQL query based on the user's voice, a novel database query form interface, which can dynamically generate query forms.

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

I. INTRODUCTION

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 transac- tion, 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.

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.

Problem Statement:
Most of used don't know about the data access, data searching, data query so, user have better knowledge that area. A voice controlled system for blind, which transceivers information in the form of audio: a personal virtual assistant which can take the human voice commands to perform tasks which otherwise would need the dependence on others.

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[1].

This paper places an interest in some emerging capabilities for incremental speech understanding and processing in virtual human dialogue systems. This work is part of an in progress effort that aims to enable practical spoken dialogue with virtual humans in multiparty arbitration scenarios .These scenarios are designed to allow trainees to practice their intervention skills by engaging in face-to-face spoken negotiation with one or more virtual humans. An important factor in achieving naturalistic behaviour in these arbitration scenarios, which ideally should have the virtual humans representing fluid turn-taking, composite reasoning, and responding to factors like trust and emotions, is for the virtual humans to begin to understand [2].

The current custom in virtual human dialogue systems is to use skilled human recordings or limited-domain speech synthesis. Both approaches lead to good show but at an elevated cost. To determine the best trade-off between performance and cost, we perform an evaluation of a human and synthesize voices with respect to naturalness, conversational aspect, and likability. Varying the type,

length, and content of utterances, and take into account the age and native language of ratters as well as their expertise with speech synthesis. The results suggest that a professional human voice can surpass both an amateur human voice and synthesized voices. Also, a high-quality general-purpose voice or a good limited-domain voice can execute better than part-time human recordings. As expected, in most cases, the high-quality general-purpose voice is rated higher than the limited-domain voice. There is also a non-statistically significant trend that has been observed for long or negative utterances to receive lower ratings [3].

The aim of this paper is to explore business applications of chat bots, as well as to propose several extent metrics to evaluate practice, usability and overall quality of an embodied conversational agent. On the basis of these metrics we examine existing Polish-speaking commercial chat bots that, firstly, work in the B2C subdivision. Secondly, reach the widest possible range of users. And lastly, are most probably the most advanced commercial deployments of their creators. The system analyses various aspects of functioning of each personified conversational agent: optical look, form of operation on the website, speech amalgamation unit, built-in knowledge base, presentation of knowledge and supplementary functionalities, conversational abilities and perspective sensitiveness, personality traits, personalization options, emergency responses in unforeseen situations, possibility of rating chatbot and the website by the user [4]

III. PROPOSED SYSTEM

A. Description:

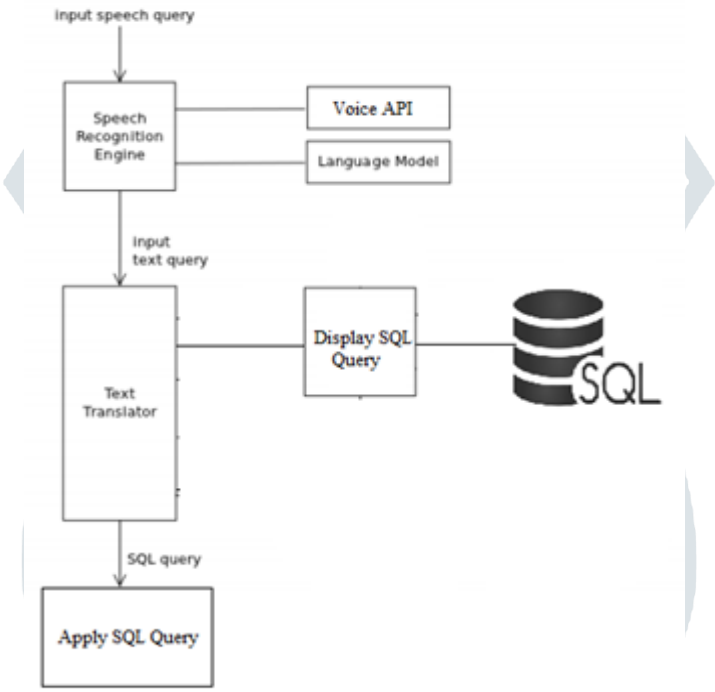

Fig 1. System architecture

System Feature 1
The system will help non-technical people in learning sql queries using voice and text.

System Feature 2
User can fire their own queries for demo database using voice or text.

B. Mathematical Model

Input-Output:

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

C. Algorithm:

Following will be our algorithm step
1. Scanning the database:
Here we will go through the database to get the table names, column names, primary and foreign keys.
2. Input:
We will take a sentence as a input from the user (using voice) then convert into text.
3. Tokenize and Tag:
We will tokenize the sentence and using POS tagging to tag the words
4. Syntactic Parsing:
Here we will try to map the table name and column name with the given natural query. Also, we will try to identify different attributes of the query.
5. Filtering Redundancy:
Here we will try to eliminate redundancy like if while mapping we have create a join requirement and if they are not necessary then we remove the extra table.
6. Query Formation:
Here we will form a complete SQL query based on MySQL syntax.
7. Query Execution:
Here we will execute the query on database to get results.

IV. RESULT

In this project, the system translating English query into an SQL query using semantic grammar. The system will accept the user's query in natural language as an input. The program will check whether the query is valid. Then we'll generate tokens by performing the division of the question clause. Each token represents a single word in the user's query. The tokens from the query clause are compared with clauses already stored within the dictionary. The dictionary needs to be constantly updated. Then the algorithm scans the tokens and tries to seek out attributes present within the query. Then we discover all the tables within the database which contain the attributes by comparing syntax and semantics. Then we build the ultimate SQL query and execute it on the database and return the result dataset to the user.

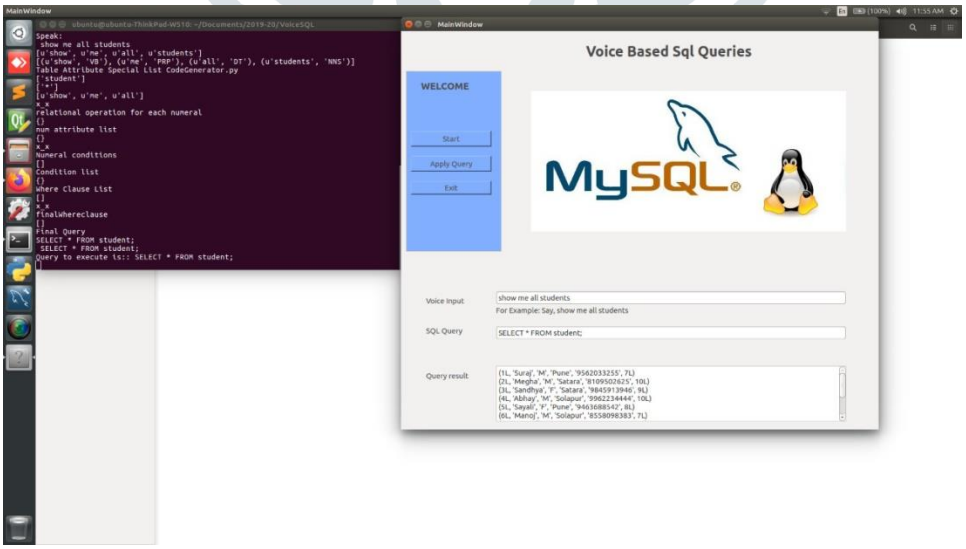

Fig 2. Final Query Result

V. CONCLUSION

Use of Natural Language brings ease for any human being. This system helps user to easily retrieve data from database using simple English language. The user need not learn complex query language like SQL. We can add more synonyms for column names and table names so that system is able to handle more queries. The system also stores the successfully executed queries based on voice

generation. This system provides some recommendations so that it is helpful for user. In future we can add some strong recommendation framework in this system so that user will have to take fewer efforts.

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