A Synopsis on

# Learning Management System for Visually Impaired Using Natural Language Processing

Submitted in partial fulfillment of the requirements
of the degree of

**Bachelor of Engineering**

in

**Information Technology**

by

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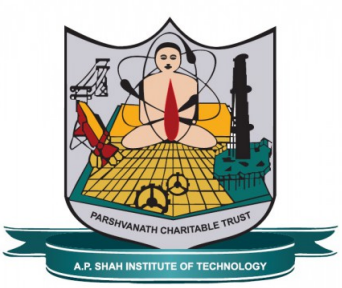


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# CERTIFICATE

This is to certify that the project Synopsis entitled ***"LMS For Visually Impaired Using Natual Language Processing"*** Submitted by ***"Pranav Patil (15104053),Neha Patil(16204006),Gaurang Patankar(16204036),Akshay Jadhav(16204021)"*** for the partial fulfillment of the requirement for award of a degree ***Bachelor of Engineering*** in ***Information Technology.***to the University of Mumbai,is a bonafide work carried out during academic year 2018-2019

(Prof.Apeksha Mohite)
Guide

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Date:

## Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, We have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Date:

# Abstract

The Internet has became an important tool for learners to acquire information and knowledge that encompasses various elements such as text, graphic, numeric, and animation for their learning process. However, the visually impaired learners have no access at all to this tool nor can it be easily taught to them as they are not able to see the links in the web pages. This paper highlights the usage of learning management system through natural language processing that has the capability to access the contents of website and listening to the content of the search only by inputting the voice command to the system.As per the survey there are various E-learning websites available but, none of them provides functionality of voice in - voice out so, by using this functionality we are providing ease of education to the blind user through our website.The website is built with a translator that has the functionality to convert html codes to voice; voice to text again .

# Introduction

The basic idea is that we will be creating a plug-in for moodle where the system will take voice input from user and based on the received input our system will action example checking current subjects through voice command.There is still no system offering easy and intelligent solution for visually impaired but rather a complex solutions.As moodle is one of the most popularly used open source E-learning website.Hence,we can efficiently use some best features of moodle in our work.

# Objectives

[1]To make learning easy for the visually impaired with the help of voice in voice out.

[2]Can be used by physically impaired people.

[3]Certain research explained that you gain more knowledge when you listen something than when you read hence our system can help to learn efficiently. bjectives

# Literature Review

[1] Multilanguage natural user interface to database Ruslan Posevkin Chair of Computation Technologies ITMO University: Natural language user interface is considered to be a specific intelligence system providing a dialogue between the user and the software system within a definite subject field. Intelligence system of natural language user interface consists of:

User interface whereby the user inputs the message and gets an answer from the system.

Translator of natural language requests to internal language of queries.

Translator of internal language units to natural language.

The operation cycle of natural language user interfaces starts with the message input in natural language by entering the text. The next step is creating a formal description of the text. All previous analysis results are used to analyse the following queries. It makes it possible to resolve the issues connected with using the same terms in different subject fields. All components of natural language user interface knowledge machine may be classified into translators and analyzers. Translators translate knowledge from one language to another. For example, they translate the descriptive knowledge of some subject field to a natural language text. The analyzers analyze knowledge units and develop previously unknown facts. For example, it can be the analysis of a users question to find an answer.

[2] Construction of a Voice Driven Life Assistant System for Visually Impaired People ;Runze Chen, Zhanhong Tian, Hailun Liu, Fang Zhao, Shuai Zhang, Haobo Liu ;Beijing, 2017 : There are many solutions to simplify the way people interacting with computers. The stability of natural language understanding and voice recognition have developed so well that blind person can also has the chance to use the mobile phone easily. To understand the intention of user and extract key information in the sentences spoken, natural language understanding technology should classify the intent and its content so as to extract the entities from the raw sentence. Microsoft has released LUIS [6], a natural language understanding service which can extract the intent and entities from the sentence. An open-source project named Rasa NLU [7] can also provide support to classify the intent and extract the entities. However, Rasa NLU need to be modified to understand Chinese text. A falling detection system has been designed by Wang Rong [8] et al. has provide a solution to detect elder people's movement. Also, as a risk warning service, the falling detection system can be used to protect blind and visually impaired people and alarm their family when abnormal event happens. Kaiming He [9] created a method to detect objects in images which extends Fast R-CNN named Mask R-CNN [10]. The object detection technology can help blind group to know what appears in front of their walking direction well, so we also integrated the Mask R-CNN algorithm into the system to describe the view in front of the blind user.

[3] International Journal of Computer Applications (0975 8887) Volume 131 No.11, December2018 :

Speech recognition is a vast research field for researchers in modern era. Earlier, the human language was processed by the computer system for speech recognition. Thus, the main objective is to develop recognition system which improves human to human communication by enabling human-machine communication by processing of text or speech. Various applications of speech recognition systems are present and these all includes various research challenges. A

critical machine learning based review is defined which addresses the various challenging tasks of speech recognition system in NLP. In the existing systems, the recognition rate is very less and the noise ration during the recognition process creates a problem. Thus in this literature review we try to address such kind of challenges and provides a solution to work further in future.

TYPES OF SPEECH RECOGNITION:

A. Connected word system The combination of two words forms a one single word. The minimal pause is taken between the utterance of two words and isolated word is formed.

B. Continuous speech recognizer It is also known as computer dictation. It is natural speech of a speaker.

C. Spontaneous speech system The natural sounds like ums aah hmm utterance along with speech.

D. Voice verification/identification The identification and verification of specific speakers voice by applying various tools and techniques.

[4] Ira J. Kalet, in Principles of Biomedical Informatics (Second Edition), 2014 :

In processing messages, as in natural language processing and in compiling computer programs from source code to machine code, there are two distinct steps. First, the input message, a sequence of bytes or characters, must be divided up into tokens. A token is a single logical unit, like a word in natural language, an identifier or operator in a programming language, or a message datum in a message. Then the sequence of tokens is analyzed to determine its structure (syntax) and meaning (semantics). The first step is called scanning or lexical analysis. The second step is called parsing. For HL7 messages, the scanning step is easy. Certain characters are used as field delimiters, and each token is a string that is between two successive delimiters. In a programming language the scanning step is more complex, because there are usually several kinds of delimiters or token termination characters.

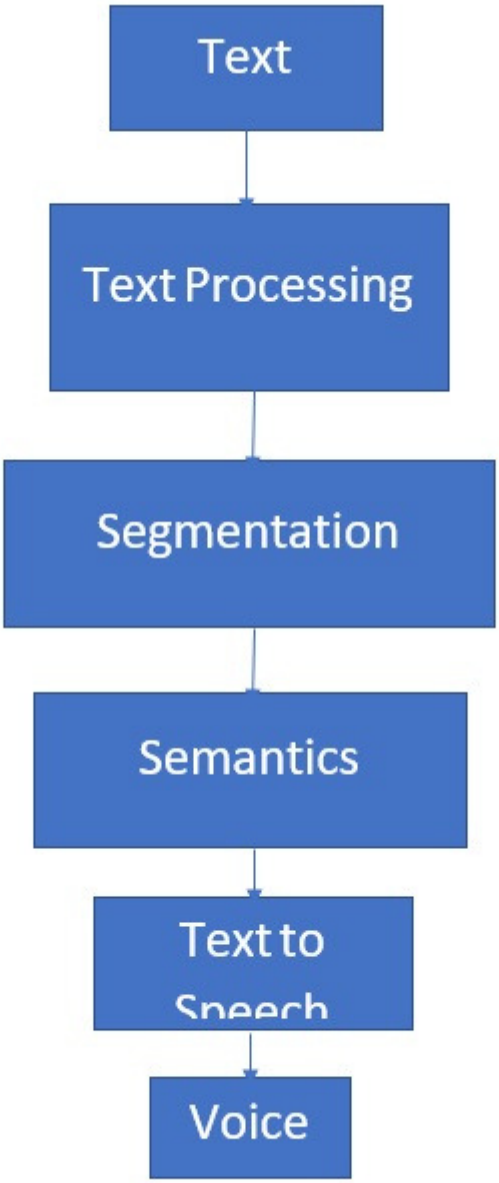
Once the parsing is completed, we have a hierarchical structure containing the tokens and groups of tokens. The final step is to do something meaningful with the tokens, such as storing the data in appropriate fields and records.

[5] (Kumar D., 2015) Antony P J and Dr. Soman : In this paper (Kumar D., 2010) Antony P J and Dr. Soman had presented a survey on developments of different POS tagger systems as well as POS tagsets for Indian languages and the existing approaches that have been used to develop POS tagger tools . They concluded that almost all existing Indian language POS tagging systems are based on statistical and hybrid approach. This Paper (Antony P. J, 2011) specifies A CRF (Conditional Random Fields) based part of speech tagger and chunker for Hindi had been used by Aggarwal Himashu and Amni Anirudh. After evaluation they found that the strength of Conditional Random Fields can be seen on large training data and CRF performs better for chunking rather than for POS tagging with the training on same sized data. With training on 21000 words with the best feature set, the CRF based POS tagger is 82.67

# Problem Definition

There is a growing awareness among parents, teachers, blind youth, and the adult blind community that the education which blind children are receiving is failing them. They are not receiving a quality education which can prepare them to compete in the demanding high tech economy and society of the 21st Century. They are not learning to use and trust the alternative techniques like learning systems which blind persons must adopt with if they are to be successful. They are not developing a positive attitude towards their blindness which is essential to them if they are to become confident, responsible and productive adults.

## System Architecture




As the project's core is based on the use of natural language processing(NLP), the main focus will be on 'Text to Speech' 'Speech to Text'. The above architecture diagram start from the 'Text' generated by the text-to-speech module, which is further send for 'Text Processing'.Further 'Segmentation' is performed on the processed text to divide sentences.'Semantics' is used for grammer utilization for converstion into speech.Finally 'Speech' is the output, the user will receive

# Use-Case Diagram:

The following use-case is based on the interactions between a blind user and a desktop website.Thus the blind user will be going through following actions to interact with the desktop site. The blind user starts the website's functioning through his/her voice as an input. Then the website cycles through the main menu and play's instructions by voice to ask user, which course he would like to go through.This launches the website to further provide the information related to the course page by voice.Finally, the user closes the website by the input of his/her voice again to pause or exit the website.

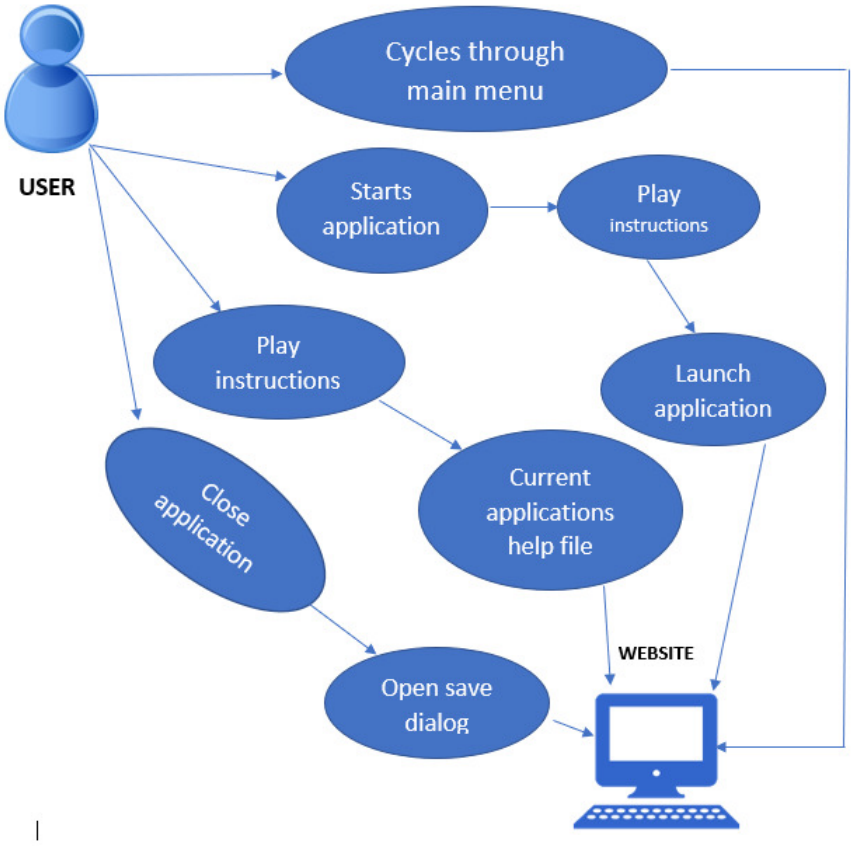



Figure 1: Use Case Diagram

# Summary

The work presented in this report is related to learning management system using Natural Language Processing.In this project,we have made a website for Engineering students who are Visually impaired .Blind people can interact with the website through Text-to-Speech(TTS) module. The Blind user will interact with website through voice as a input and the website will respond through text as a output. Particular Website is made for the Engineering students.This will help the Blind People to get the notes through website.It can also be used by the physically impaired people,making learning easy to them.

# References

[1] Multilanguage natural user interface to database Rus-lan Posevkin Chair of Computation Technologies ITMOUniversity Saint Petersburg, Russia rusposevkin@mail.ru2017

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