Voice Based Email for Visually Impaired

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ABSTRACT

The evolution of internet has completely changed many fields as it made the human life so easy because in the today world, they can access anything from anywhere at any time. It becomes a major part of today's human life because without this, human being even can't imagine their life in modern era. There are dramatic changes which came in the field of communication as people can send any information to anyone within few seconds. But, still there are few visually abled people which can't use this modern technology because they have not gifted the eyes and all activities related to communication are based on the visual perception. By considering it as an idea for a project, this project helps the visually impaired persons in the communication process. So, this application would not require keyboard facility further as direct speech to text conversion and vice versa facility would be available for such special peoples. The process of identifying the speech is called speech recognition.

Keywords: *Communication, Speech recognition, Speech to Text, Visual Perception*

1. INTRODUCTION

In the today world internet plays a major role in the field of communication. By considering the communication, emails are the most popular technology which is widely used in the modern time worldwide.

Everyone can use the email technology or sending and receiving messages but there are some special people who are blind or illiterate who can't use this modern technology as they can't see the alphabets on keyboards or can't understand the meaning of different letters on keyboard [1]. So, it is very hard for them to survive in this modern world of internet. The main aim of this project is to help such special visually impaired persons so that they can also take the advantage of the modern and latest technologies which makes human life easier.

By the evolution of this project, the users don't need to learn and remember the keyboard shortcuts and location of different keys. Only by simple speaking the text message, user can send their messages to anyone. This system would also save the time of many users as time is very precious for every user in the modern era. This system would also help handicapped and illiterate people along with visually impaired persons [2].

2. EXISTING SYSTEM

In the simple e-mail system, blind people can't send the emails as they can't see the keyboard buttons and shortcuts on the screen by their eyes. In the today's world, emails are considered to be most reliable source of communication. One solution is that there must be any third person whom they first deliver their message and then, that third party will send their messages further to the required receiver [3]. But, this is not the correct solution of this problem as it is not possible that any third party is available every time whenever they required. Voice based email is the only solution of this problem.

Accepted 15 April 2020.

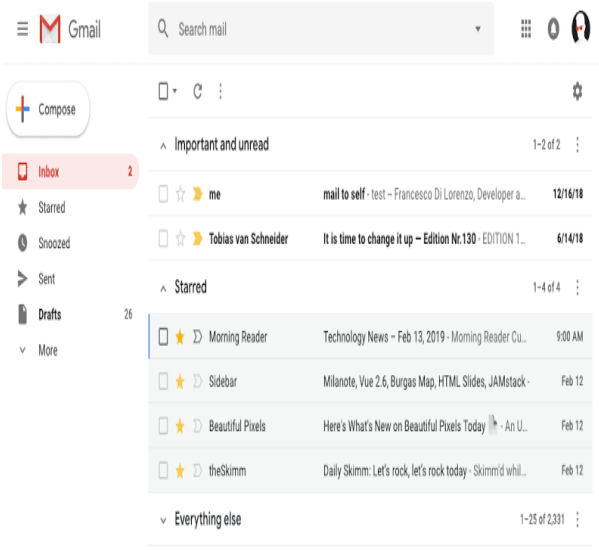

Fig 1: Existing System of E-Mail

3. PROPOSED SYSTEM

This projects provides the system which can be used by the visually impaired persons efficiently for sending and receiving the emails in the modern era. This research helped them to send and receive the messages in their own languages with the help of their voice only. Speech recognition is the major component of this system as Speech to Text conversion and vice versa modules are present in the system. This system performs better than the simple email system in various aspects [4].

Also, for the betterment of society and provide equal status to visually impaired persons in the society, we came up this project idea so that they can also use the modern technologies for the communication in the today's world.

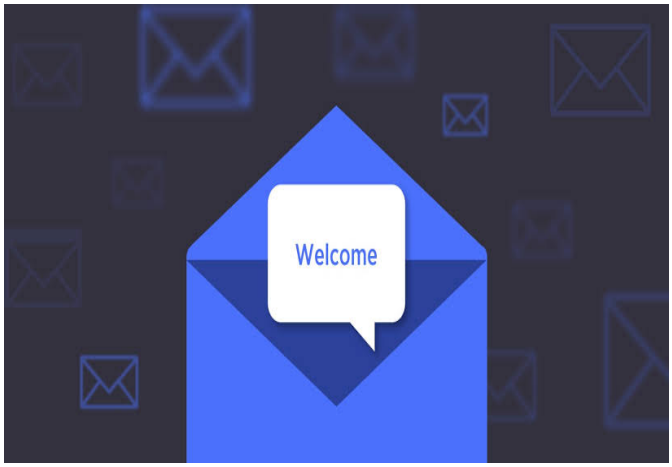

Fig 2: Proposed System of E-Mail

4. SYSTEM DESCRIPTION

The design of this system is divided into three categories:

- User Interface Design
- Database Design
- System Design

User Interface Design:

In this phase, user interface of the system or project is developed. Basically, web page with which user will interact with the proposed system. This phase plays a vital role in the development of this system.

Database Design:

Database is the building block of every project as it plays a major role in the development of any system. In this phase, database would be designed in which all the information of the users would be stored for future reference at any time. In this system, database store the messages sent or received from or to the user of the system.

System Design:

This is the final and major phase of this project. In this phase, flow diagram of the complete working system is designed. This phase shows the detailed representation of different flow charts and procedures [5].

Speech Recognition plays a major role in the development of this project. It is the ability of the program or machine to identify different words or phrases and convert them into the machine format. This is the technique or technology by which blind or illiterate persons simply spoke their messages in their own language and then system would send their message to the required receiver [6].

It works using several algorithms with the help of language modelling. Language modelling matches the different sounds with sequence of words to distinguish between words that sounds similar [7].

Generally, Hidden Markov Model (HMM) is used to recognise the temporal patterns in the speech to improve accuracy within the system [8].

The architecture of Speech Recognition is shown in the below figure:

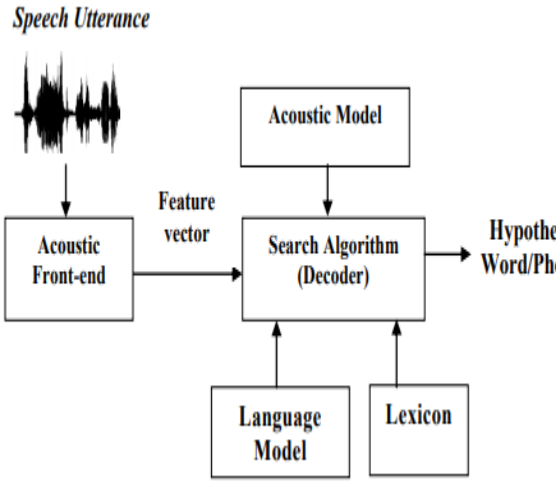

Fig 3: Speech Recognition Architecture

5. MODULE DESCRIPTION

There are various modules which would be developed for this system:

- Registration Page
- Login Page
- Sender mail-id Textbox
- Recipient mail-id Textbox
- Subject Textbox

Registration Page:

This is the first and basic module of this system as users firstly register themselves with the valid email id and password. The password constraint is minimum of 8 lengths with all the numeric characters.

Login Page:

After register themselves on the system, they are asked to login with the same mail id and password which they use at the time of registration. Numeric characters are used in the password so that visually impaired person can login to the system easily and efficiently.

Sender mail-id Textbox:

As the system requires the sender mail-id for the communication process, so this module is also plays a vital role in the system. There will be a textbox in which sender's mail-id would be automatically written whenever user speaks their id through the voice.

Recipient mail-id Textbox:

The system will also ask the receiver mail-id, so for this another textbox is required in which receiver mail-id will enter. In the same way, it would be automatically entered whenever sender speaks.

Subject Textbox:

A message box is available in the system in which sender will enter the subject line for the message which sender wants to send the required message [9].

6. REQUIREMENT SPECIFICATIONS

Implementation Details:

- Code : Python 3
- IDE : Pycharm
- Front End : Jinja Template
- Back End : Flask
- Database : My SQL
- Web Browser : Chrome

System Specifications:

- CPU – Intel Core i3/i5 3.60 Ghz

- RAM – 4/8 Gb
- GPU – Nvidia/AMD/Intel Integrated

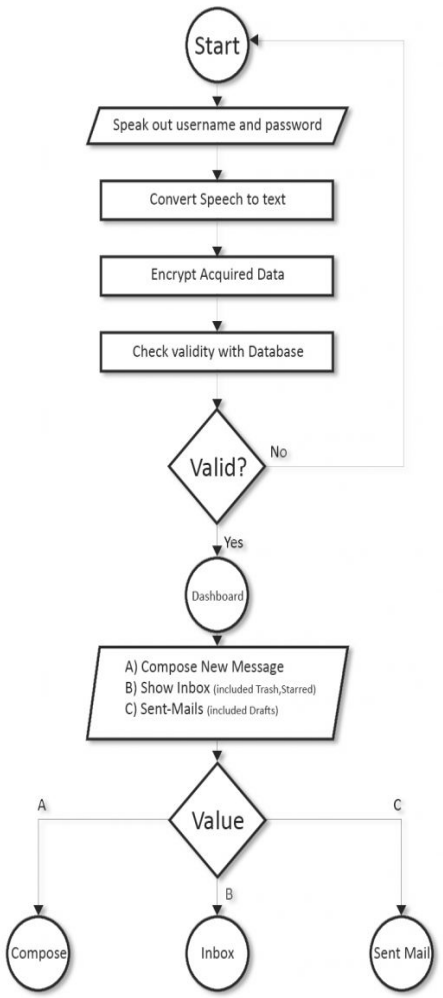

Fig 4: Login and Dashboard Flowchart

7. CONCLUSION

This project is projected for the betterment of society. This project aims to help the visually impaired people to be a part of growing digital India by using internet and also aims to make life of such people quite easy. Also, these special abled people also deserves associate degree equal commonplace in the society [10].

This project provides an easy means for visually impaired persons for sending and receiving messages without any guidance and supervision. With the help of this project, the dependency of the visually abled people on the other people can be reduced. Voice based E-mail service can be used by visually abed people so easily and efficiently. This project can be used by other several departments like businessman, local people, local authority, local governance, emergency services, etc [11].

For the further development of the system, encryption and decryption algorithm can be used or implemented for securing the identity of the user. Also, several different functionalities can be added in order to improve and using it on the large scale in the future. Also, it can be used by the professional industries in the future. By taking in consideration the requirement for the large scale, this system can be scaled up to a great extent [12].

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Accepted 15 April 2020.