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Modern Education Society's College of Engineering, Pune
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ACCREDITED BY NAAC WITH A GRADE (CGPA 3.13)

DEPARTMENT OF COMPUTER ENGINEERING



A REPORT ON

“Project Based Learning - II”

S.E. (COMPUTER)

SUBMITTED BY

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UNDER THE GUIDANCE OF
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(Academic Year: 2020-2021)

MESCOE, Department of Computer Engineering 2020-21

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Certificate

PBL Report

This is to certify that PBL entitled 'INDIAN RAILWAY ANNOUNCEMENT SYSTEM IN PYTHON' has been completed by Mr. Pratik S. Bagad (72025576H), Mr. Amol S. Kengar (72025735C), Mr. Jayesh S. Khairnar (72025737K), Mr. Sankalp Oimbe (72025807D), Mr. Mandar W. Phirke (72025840F) of SE COMP 2 in the Semester - II of academic year 2020-2021 in partial fulfillment of the Second Year of Bachelor degree in "Computer Engineering" as prescribed by the Savitribai Phule Pune University.

Prof S.K. Wagh
Guide

Dr. (Mrs.) N.F.
Shaikh
H.O.D

Place: MESCOE, Pune.
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ABSTRACT

This undertaking centers on building up a mechanized framework for travelers. The principle point of this Railway Announcement System is to accomplish better exactness and to make the framework progressively proficient with the goal that it can produce 1000 of announcement in a small amount of second.

Frequently these chronicles are utilized at bigger stations where the travelers are bigger in number. Number of trains beginning or going through these stations is high. Rather than recording all train numbers, train data, for example, train number, train name and platform number is put away. The words like train number, platform number, source and destination are put away. All details of train and the expressions are assembled and played together. At the point when it is playing it will be in two languages that are Hindi and English.

The technologies of innovations are utilized in Indian Railways. The standard voice is pre-recorded and the spaces are loaded up with train numbers, expected appearance time, and stages. There is an interface with client input information (train number, anticipated time, stage, and so on.) and different choices. For example, execution train data, broadcaster. Sections are made physically utilizing the data accessible through sources. Some other obsolete techniques that have a set number of properties are utilized.

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1. INTRODUCTION

We as a whole realize Indian Railways is one of the greatest railroad frameworks on the planet. So, they need a decent framework for the great announcement of such countless trains at all stations. The declaration framework at Indian Railways is utilized by the PC at all stations by the station master. We can organize the announcement in two categories: -

1) Pre-recorded Announcement 2) Spontaneous Announcement

Spontaneous announcement is those announcements which are utilized for little stations where number of trains and platform are little in number. Here station master makes the announcement on mic or amplifier. Spontaneous announcement is the most seasoned strategy for announcement where travelers are additionally little in number.

Pre-Recorded Announcement is that announcement that can be put away before in PC and can be utilized later during the announcement. In this type of announcement all the changing expressions are constantly recorded independently and after it would be merge. Just the variable stages are changes for each train name and stage are recorded independently and the expressions those are changes routinely are recorded in dependently.

In our Railway Announcement Generator all the Information about the train is as of now put away in the PC and this is additionally utilized during the announcement. The text which we enter manually should be converted into speech.

Each word or expression utilized in announcement is recorded and put away in that software's database. At that point the administrator inputs the alternative (with each recorded voice) and all words and expressions are played sequentially, which we call it as announcement. It is an integrated system to fill in as an auto announcement PA framework, show system and coach guided promoting system. The system can make a programmed revelation with a pre-recorded voice brief, which is stored on the computer.

1.1 Problem Statement:

To develop a program (Software) of an 'Indian Railway Announcement System' using python.

1.2 Objectives:

- To design a train announcement software.
- To develop a program to help passengers on railway stations to know the status of train.
- To offer simple and user-friendly train ton announcement software to passengers and station master.

1.3 Purposed Methodology:

In Proposed work, the system is structure so that it can use in large just as little station with no need of uncommon programming. When the proposed works get finished, announcement system will be completely robotized or there will be less human intercession. It can generate 1000 of announcement at a time on a single click depending on our Internet speed.

Railway Announcement Generator is Software to generate Railway Announcement, Instead of Recording all Train Information. For Railway Announcement Generator we used Python Language.

The Working of a Railway Announcement Generator is as follows:

- The Dummy mp3Announcement which going to be used gets split with the help of pandas, pydub and pyaudio openpyxl python module to get commonly used phrases in railway announcement.
- The Train information such as train number, train name, platform number, source, destination which is entered manually will be converted from text to speech with the help of GTTS (Google Text to Speech Converter) Python Module.
- Now, Generated train details and commonly used phrases will be combined in proper announcement format to generate complete announcement.
- Now generated announcement will be played with the help of announcement player.

1.3 Requirements:

1.3.1 Software:

- Windows Operating System (XP or higher version)
- Back end: Python3
- Tools: V S Code

1.3.2 Hardware:

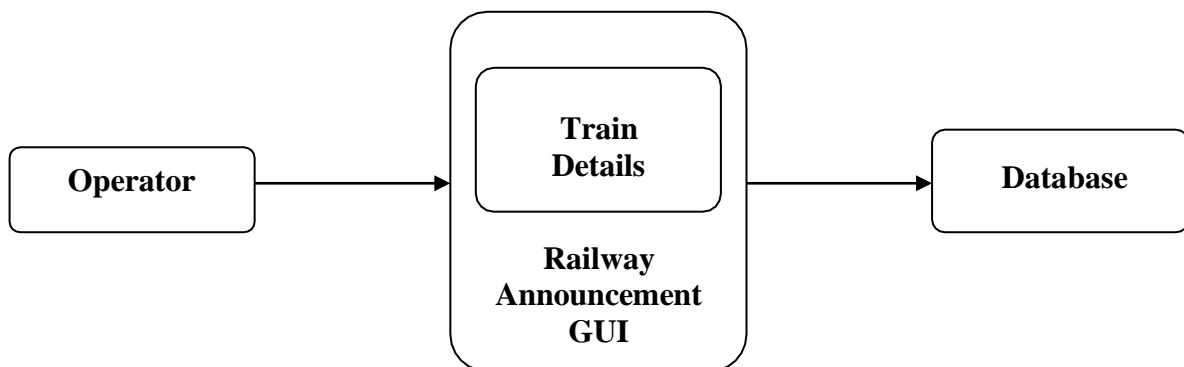
- Processor: IntelCorei5-7500(6MCache, upto3.80GHz)
- RAM :8GB
- Harddisk:1TB

2. Implementation

For Railway Announcement Generator we are using Python language. In python we are making two file first is for GUI (Graphical User Interface) of our project and second is for Announcement Generation. In both the files we are using different python modules like Openpyxl, GTTS, Pandas, Pydub and Pyaudio.

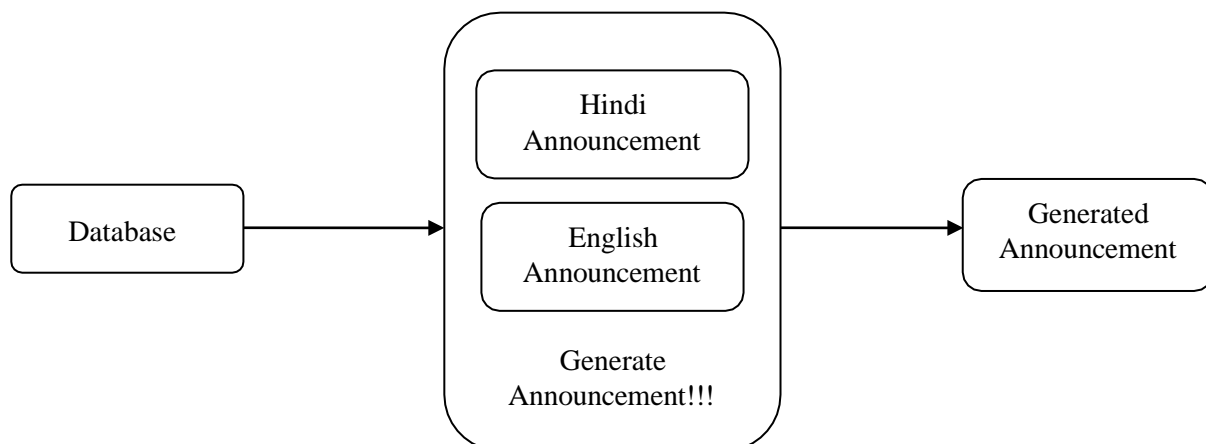
- **First Phase: Storing Train Details:**

In first phase the proposed system stores the Train details for example, Train name, Train No., Platform No., Source, Destination in excel file record with the assistance of Python Module-Openpyxl. Administrator can spare more than one train detail in the event that they will generate announcement for more than one train.



- **Second Phase:** Generating Announcement in Second phase, The Announcement will be created according to entered Train details. Administrator needs to choose language in which he/she needs announcement. Subsequent to tapping on Announcement button, the Announcement Generation python record which we are utilizing to create announcement begin running. It will bring train details from excel file record with the assistance of Openpyxl Module and convert it from text to speech with the help of GTTS module.

TheDummyrailwayannouncementwillgetsplitandjoinedwithcreatedGTTSsections in an appropriate announcement design with the assistance of Pydub, Pandas and Pyaudio modules and announcement will get saved in given path folder.



3. WORKDONE

3.1 Proposed System Diagram:

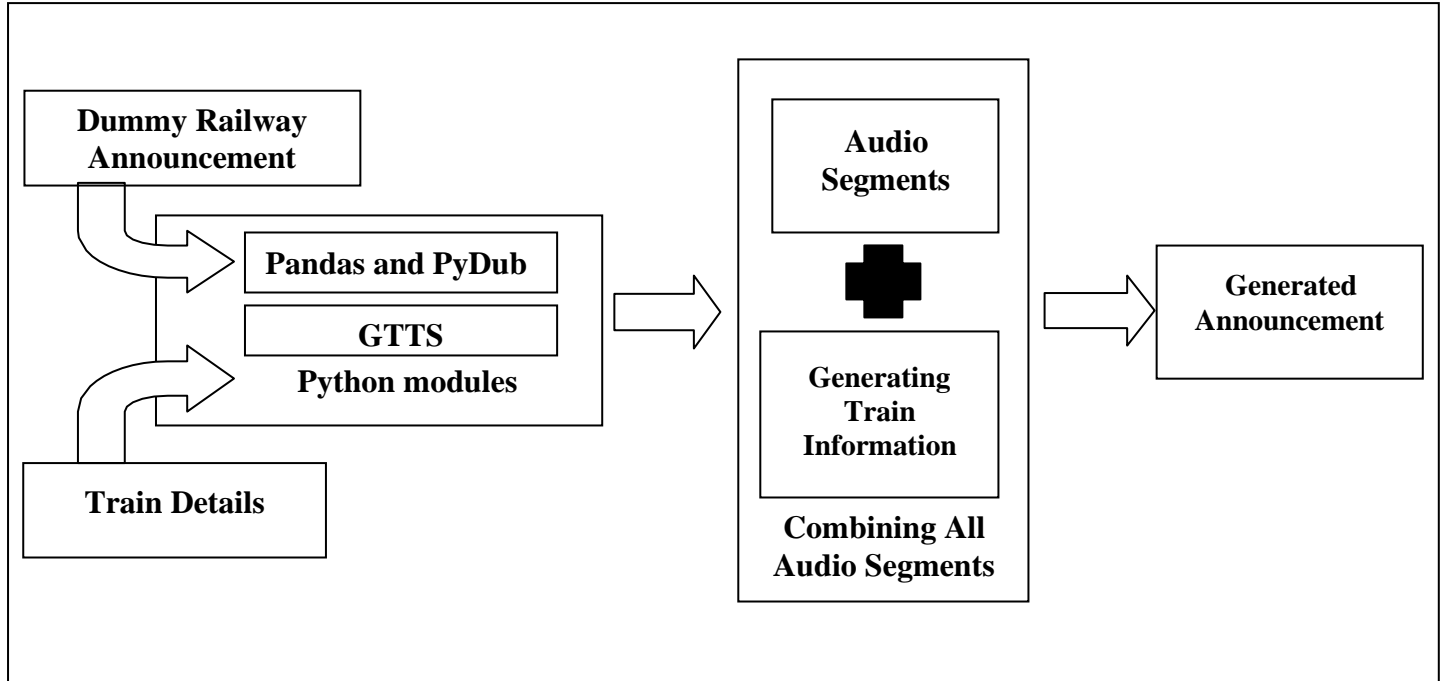


Figure 3.1: Proposed System Diagram

3.2 Algorithm of Problem:

- Step1:Start
- Step2: Import the entire required modules.
- Step3: Function named `texttospeech(text, filename)` is created. This function will convert the text to audio later this audio will be converted to mp3.
- Step4: Function named `mergeAudio(audios)` is created. Here we have used `pydub` function and it returns `pydub` audio segments.
- Step5: `generateskeleton()` function is created. This function will slice some audio part from our dummy file i.e., `railway.mp3` which is in the same folder using `pydub` like we slice in string and then we stitched that audio file.
`audio = Audiosegment.from_mp3('railway.mp3')`.
This function will read the entire excel file.
- Step6: Now we will take some Hindi announcement part from our dummy announcement. E.g., 1. Kripiya dhyani dijiye, 2. Selekhar, 3. Ke raste, 4. KO Jane wali gadi Sankhya, 5. Koch hi samay meh platform Sankhya, 6. Aarahi Hai.

- Step7: Similarly, we will take some English announcement also from dummy announcement. E.g., 1. May I have your attention please, 2. From, 3. To, 4. Via, 5? Is arriving shortly on platform no.
- Step8: Due to that 1-hindi.mp3, 3_hindi.mp3... and so on will be generated in same folder.
- Step9: Function named generate(announcement) is created which will access the excel file (i.e., Announcement_hindi.xlsx) where all the data is stored.
- Step10: Then we will iterate through df.iterrow () which is a function of pandas data frame. We will then generate 1. From city, 2. Via city, 3. To city, 4. Train no. & name, 5. Platform no. & similarly for English announcement.
- Step11: Now texttospeech function is used which will generateallmp3filesinafolder
- Step12: Then we will make a list of all audio and merge it using mergeAudios function.
- Step13: Finally, Announcement will be created.
- Step14: Stop

3.3 Result:



ResultS - Railway announcement System (PBL).mp4

3.4 Challenges faced:

1. We faced challenges while downloading required python modules in our system especially pydub.
2. We found more difficulties while slicing the audio from dummy audio file.
3. The next challenge was for accessing data from excel file from our system which was solved after installing another pymodule-openpyxl.

1. CONCLUSION

4.1 Conclusion:

The principle point of this railway announcement generator is to give voice-based announcement which requires less time to create the announcement. It is utilized to generate automatic announcement for train in various language. This project can reach out to any number of stations.

4.2 Future Scope:

- We can spare all data in a single database as opposed to entering each time which will decrease human exertion and we can recover it just via Train number which is extraordinary for all trains.
- We can utilize GPS system with this proposed system to get train location alongside AI and Machine Learning technique to get train details and create announcement automatically.
- After completely creating this project, we can utilize this software in other transport services.

5. REFERENCE

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