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SMART MUSIC PLAYER

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Abstract- Nowadays in the era of smart phones world needs a smart applications that are easy to use and very effective in the end. Android is the one of the popular mobile application platform these days which we have used. SMART music player is the android application which can be operated on menu driven commands as well as voice commands. All the basic functionalities of music player can be operated via voice inputs. SMART music player can also be used for the promotions of movies, songs etc. It can be a good advertising media. It also provides the facilities which can synchronize with social media like facebook, twitter etc.

Keywords- *Android, Speech Recognition, Feasibility, UML diagram*

I. INTRODUCTION

The main challenge in developing the SMART music player is to provide facility to accept the voice input for Indian accent. Speech recognition converts spoken words to machine-readable input, this input allows the machine to identify words the person is speaking and subsequently process the command. It lets users manipulate the machine verbally without having manually control over it.

This has the benefit of helping users to complete their work more efficiently while doing multiple tasks simultaneously. Compared with the traditional control interfaces, speech recognition interfaces reduce the amount of attention the user has to spend on the mechanics of recording information of selecting functions and instead allows users to concentrate on their primary task.

The advantages of using speech recognition include reduced user training time, increased worker productivity, and reduced secondary key input, and improved timeliness and accuracy of information made available via voice.

It has been widely applied in various domains. For example in health care. Military, Helicopters etc. SMART music player is android application which helps user to handle the music player easily.

The main aim to develop such an advance music player is to help the disable people to operate it with ease. It also helps to keep attention on driving a vehicle and still operate the music player effectively via voice commands.

It can be operated via menu driven commands also so that one can operate it in dual way that is the main advantage of the SMART music player.

SMART music player can be operated on android version 2.3 and above. It provides very easy way to communicate with music player which reduces the efforts of user and provides maximum functionality.

It also provides very simple GUI (Graphical User Interface) which decreases the complexity of SMART music player to use it. SMART music player provides all the basic functionalities such as play, pause, stop, rewind, forward, change track etc. which can be operated via voice commands.

This music player also provides facility of advertising. Mobile advertising is a form of advertising via mobile (wireless) phones or other mobile devices.

It is a subset of mobile marketing. Nowadays film industries are investing a lot of money in advertising and promoting the movies, songs, trailers etc. so SMART music player can be an effective means of revenue generation.

SMART music player can also provide facility to synchronize with popular social networking media such as facebook and twitter to set status of current playing track.

II. FLOW OF THE APPLICATION

On entering the application the welcome screen would be displayed.

This screen would simply have the application name and logo.

Then user can control music player via voice command or using menu driven commands.

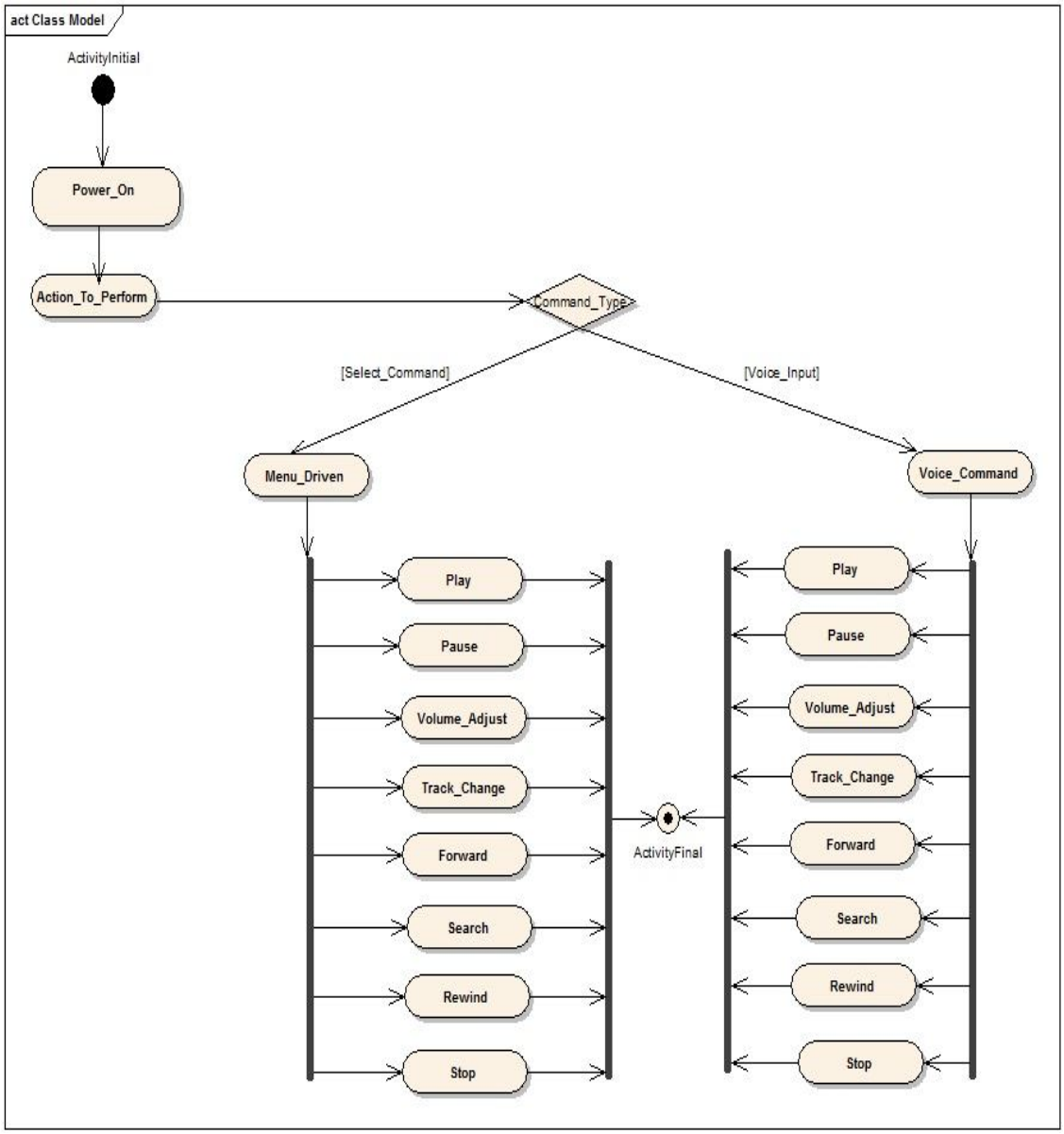


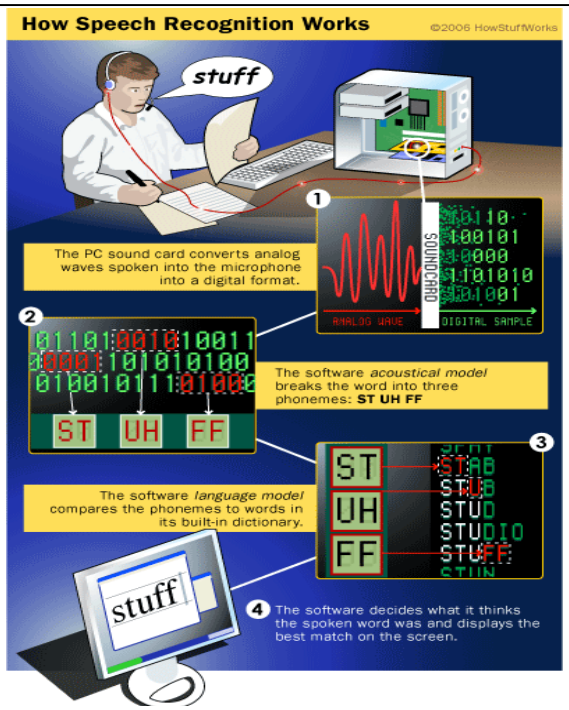
FIGURE : Flow of SMART music player application

III. SPEECH RECOGNITION

Speech to Data Conversion

To convert speech to on-screen text or a computer command, a computer has to go through several complex steps. When you speak, you create vibrations in the air. The analog-to digital converter (ADC) translates this analog wave into digital data that the computer can understand. To do this, it samples, or digitizes, the sound by taking precise measurements of the wave at frequent intervals. The system filters the digitized sound to remove unwanted noise, and sometimes to separate it into different bands of frequency (frequency is the wavelength of the sound waves, heard by humans as differences in pitch). It also normalizes the sound, or adjusts it to a constant volume level. It may also have to be temporally aligned. People don't always speak at the same speed, so the sound must be adjusted to match the speed of the template sound samples already stored in the system's memory.

Next the signal is divided into small segments as short as a few hundredths of a second, or even thousandths in the case of plosive consonant sounds -- consonant stops produced by obstructing airflow in the vocal tract -- like "p" or "t." The program then matches these segments to known phonemes in the appropriate language. A phoneme is the smallest element of a language -- a representation of the sounds we make and put together to form meaningful expressions. There are roughly 40 phonemes in the English language (different linguists have different opinions on the exact number), while other languages have more or fewer phonemes.



IV. FEASIBILITY

COMPLEX CLASSES
S= {Q, R, C, D, Is, Fs, L, A}

Where
S is System
Q is voice input command
M is menu driven input command
R is result that is output
C is set of all commands.
D is the matrix containing the voice command codes saved in the database Is is the Input State
Fs is the Final State
A is set of alphabets used

Initial condition:
Q=NULL
R=NULL
this indicates that for no input voice command there would be no output.
M=NULL
R=NULL
this indicates that for no input menu driven command there would be no output.

Intermediate Condition:
Q=P1
R=R'
this indicates that for a given voice command (P1) either a valid or invalid input(Failure) would be the result.

P1 → □ → R' € Success

P1 → □ → R' € Failure

M=P2
R=R'

This indicates that for a given voice command (P1) either a valid or invalid input (Failure) would be the result.

P2 → □ → R' € Success

P2 → □ → R' € Failure

Final Condition:
Q=NULL
R=R1'
Where R1' is the stop command.

M=NULL
R=R1'
Where R1' is the stop command.

V-set of all voice commands.
V= {v1, v2, v3……v10}
Here v1-v10 is pre saved voice command templates.

D=m*13 matrix
The database having pre saved voice commands.

A-set of alphabet
A={C}

C is to indicate giving Voice Commands

Is: Input State
(P1=Null) ^ Vi
Vi: Voice indicating start
P1=NULL indicates no input of voice command on Screen When the application begins there is no voice command given.
There is only a button present to activate voice input.
(P2=Null) ^ Mi
Mi: Menu driven indicating start
P2=NULL indicates no input via menu driven commands on screen. When the application begins there is no command Given.

Fs: Final State
(P1=Null) ^ Vj
Vj: Voice indicating stop
P1=NULL indicates no input voice command on Screen When the application exits there is no voice command given.
(P2=Null) ^ Mj
Vj: menu driven indicating stop P2=NULL indicates no input via menu driven command on screen.

Failure State:
P1 ^ R' (NULL)

Invalid input that is the voice command could not be recognized by the application.

V. FUTURE WORK

The future enhancements in the application include voice recognition for other Indian languages such as Tamil, Gujarati etc. This SMART music player app can be uploaded to Google play store for download.

VI. CONCLUSION

SMART music player can be operated through menu driven commands as well as voice commands. It can be very useful for the disabled people as they can operate the music player with ease.

SMART music player will also be useful to use while driving. SMART music player can also helpful for revenue generation through mobile ads.

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