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Newsreader Application for Blind People using Text to Speech Synthesis

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Abstract: ***Newspapers are the source of news and Information and more over it's a window to the outside World unfortunately some of us need others help to gain the knowledge. Multilingual Newspaper Reading System is a system which enables such people to get benefit of newspaper reading without depending others. It's an application which collects, classifies and reads online Newspapers in different languages. The system supports languages like English, Hindi and Marathi. The technologies like speech recognition, speech synthesis and the web are integrated together in the system. The major application of the system will be in the form of an assistive technology for visually or physically challenged, senior citizens and even the illiterate. The application also helps the busy personalities to read the Newspaper, as it provides hands free access to the news sites. The major enhancements are integration of Multilingual Automatic Speech Recognition (ASR), Multilingual Text-to-Speech system with other enhanced features like keyword search facility, Intelligent/ Auto customization in accordance with user and paper independent classified headings. The integration of ASR enables user to operate the system in complete hands free mode.***
Key Words: Newspaper Reading System, Automatic Speech Recognition, Text-to-Speech System, Multilingual application

I. INTRODUCTION

News is packaged information about current events happening somewhere else. In today's scenario, this application brings you the latest news reading experience on the go and keeps you informed on happenings from India and around the World. It also enables visually or physically challenged, senior citizens and even the illiterate people to get benefit of news reading without depending on others. It is an application which collects, classifies and reads online News in different languages like Hindi, Marathi & English. It also helps the busy personalities to read the News, as it provides hands free access to the news sites. The technologies like Text to Speech (TTS), Speech to Text (STT), with other enhanced features like keyword search facility, News recommendation and Category wise news analysis. People also get breaking news, daily news headlines & updates on politics, sports, business, Bollywood & entertainment, technology & automobile.

II. SYSTEM OVERVIEW

The system is designed with an objective of providing seamless integration of various technologies for efficient operation. The main modules are

A. News Fetching Module

News Fetching module fetches the news from different news sites as per the information in the configuration files. There are two configuration files; one for detail news and the other for the news feeder. The configuration file for the detail news contains newspaper name, URL of the news topics, information for fetching news heads and its details, font information, language information etc. The configuration file for news feeder includes language information, URL of news feeders of different newspapers, scheduling time etc. RSS fetch feeds in XML format. These feeds are then converted into News XML format which is in human readable format.

B. Keyword Search Module

Keyword search module accepts the keywords from the user and matches with the title of news. If match founds then it will display the result. The search result will be presented to the user in the user interface and will be read using text-to-speech system, so that user can give input keywords using voice commands.

C. Interfacing with Text-to-Speech (TTS)

Text to speech module is used to read title and description. On click of Read Title button TTS system starts reading all the title

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from particular section.

D. Interfacing with Speech to Text System

Speech to text system is used to search articles, open news sections example – Technology, World, Sports, Entertainment, Politics etc. using voice based command given by user. If user gives input as English Technology – App opens the English Technology section. Next if user gives voice input as Article name then system opens that article and complete description with video and images are shown to user.

III. NEWS-READER SYSTEM

A. Home Page

1) It contains navigation drawer having section like – Recommendation, Saved articles, English news articles, Hindi news Articles and Marathi news articles
2) By default Home page shows recommendation. If users like English Technology news, by default system will show English News Articles.
3) User can save articles.
4) Options are available for Text-to-Speech (TTS) and Speech-to-Text (STT)

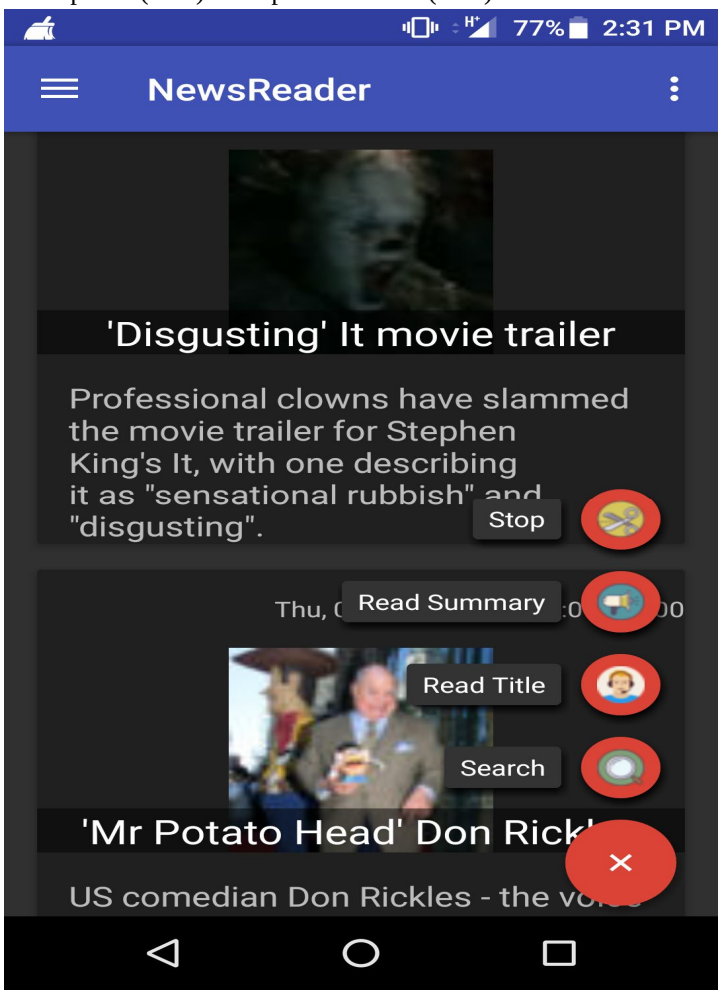

Fig. 1 Home page having options for TTS (Read Title, Read Summary and Stop) and STT (Search)

B. Navigation Drawer

1) Contains sections like Recommendation – Latest reviewed section by the user. Always display recommended articles on Home Page

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2) Saved articles section – List of saved articles by user.
3) English Section –
a) Home
b) Technology
c) Politics
d) Business
e) World
f) Entertainment
g) Strange

4) Marathi Section
a) Home
b) World
c) Politics
d) Entertainment
e) Sports
f) Astro Tips
g) Health Hit
h) Maharashtra

5) Hindi Section
a) Home
b) World
c) Business
d) Bollywood
e) Sports
f) Health
g) Special
h) Science

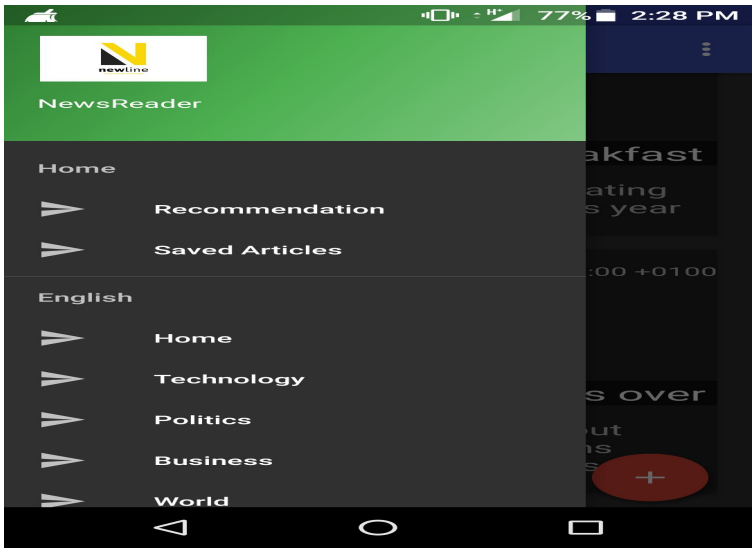

Fig 2 Navigation Drawer

C. *Speech to Text*
1) On Home page there is option called as Search – User give voice input like – English Technology. System will open Technology articles from English section. Similarly for, Hindi Business, Marathi World etc.

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2) Keyword based search feature is available in system. User give voice based input as a article name like – Modi in parliament. System will open article matching the keyword Modi in parliament

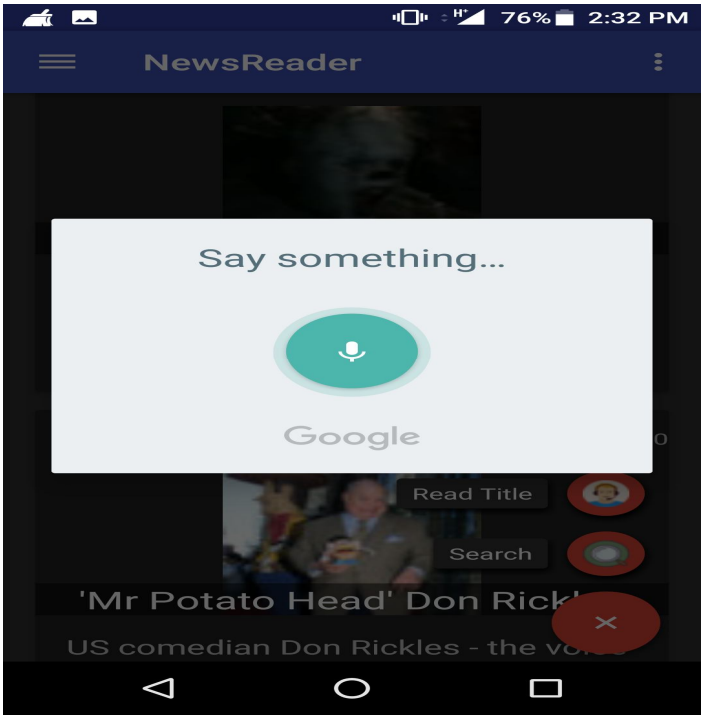

Fig 3 Search option on Home page : Speech to Text – Search sections, Keyword

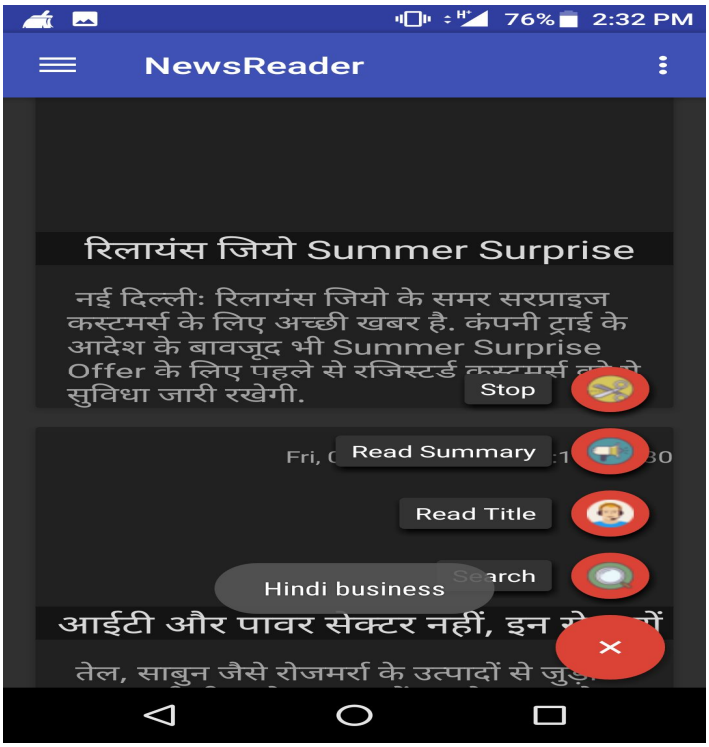

Fig 4 Results of Search option – Hindi Business

D. Text To Speech

1) Read Title will read all titles from the current section

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2) Read Summary will read title as well as short description of news

Fig 5 Result of Read title

E. Details Page

1) Full description of article

Fig 6 Details Page

F. Save Articles

1) On Details page user can save article

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2) All saved article are stored on Firebase cloud

3) All articles are shown in Saved Article section

Fig 7 Save Article

IV. CONCLUSIONS

It saves the time in reading the news as well as will help the visually challenged and senior citizens for getting awareness around the world.

V. ACKNOWLEDGMENT

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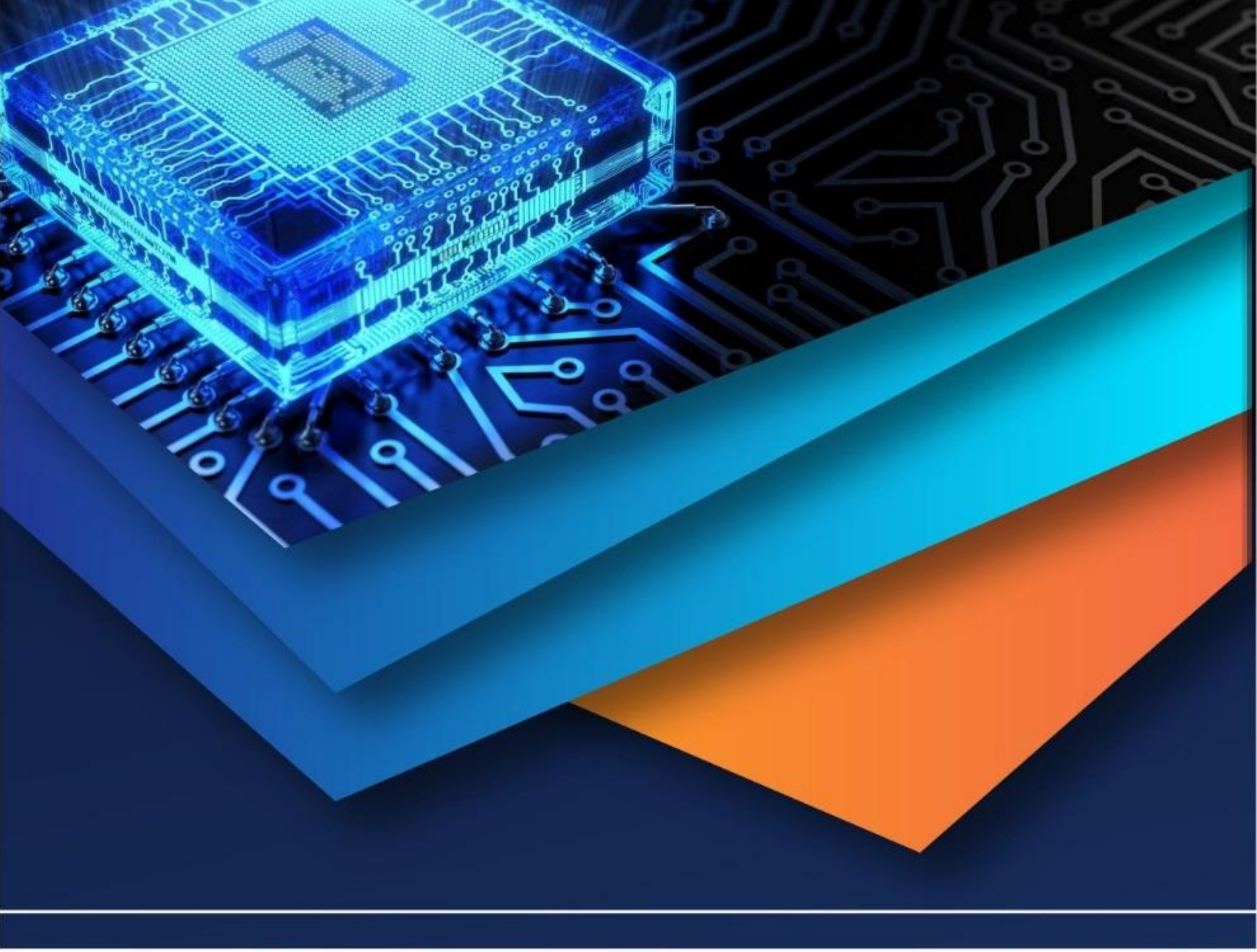

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