

Automatic Voice Responding System for Parents of Students

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ABSTRACT: Now-a-days every institute needs automation. AVR system is an automated communication system allowing user to interact with a computer to achieve the defined result without using human interface. The user can get the information at anytime from anywhere by dialling the specified mobile number. The AVR system uses computer stored data. The student data is stored in computer. The parents mobile number is stored in the computer. When a parents dial the specified mobile number, they will get the student percentage attendance in voice form. Hence parents can get the student performance report from anywhere at any time. For implementing this system we are using ARM 11 microcontroller Raspberry Pi and GSM module.

KEYWORDS: AVRS: Automatic Voice Responding System, Raspberry Pi.

I. INTRODUCTION

In today's fast life parents do not have time to visit the college for visiting professor to know the student performance. It is difficult for parents to visit the college daily to get the daily attendance of student. Also some colleges provide user name and password to the parents to see their student performance. But this system also requires internet facility. Hence the automatic voice responding system is used. This system uses the student data stored in computer and parents number register in the computer. Student's data like roll number, name, branch, year and overall percentage attendance is stored in college database. Also parent's mobile number is registered to the college database. When the parents call from the registered mobile number to the specified college number, the parents will get the student overall attendance in percentage in voice form.

The system is especially proposed for college automation. The system is based on ARM 11 microcontroller ie Raspberry Pi and GSM module. GSM is most widely used among the digital wireless telephony technologies. The GSM module equipment has a Subscriber Identity Module (SIM) security and authentication. The SIM is a data base smart card containing the user's subscription information and phone book. The advantage of the GSM is its international roaming capability in over 100 countries, improved battery life, efficient use of spectrum, advance features such as short meassaging and caller ID, a wide variety of handset and accessories, high stability mobile fax and data upto 9600 baud.

The goal of our system is to easily get the student performance in college weather their child is attending lectures properly or not. And by using this system parents can easily get the student attendance from anywhere at anytime without human interface.

II. RELATED WORK

In 2006, Aysha Qaiser and Shoab A Khan implements the automation of time and attendance using RFID systems[1]. Student and faculty are provided with RFID tags. The system is capable of marking attending, marking unauthorized entry, submission of warning via E-mails, SMS to keep them updated about their child's progress in institute, a dedicated website for availability of the processed data for user. Whenever a warning is submitted at student

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account in case of on-probation or in case of low weight age, an e-mail containing the same warning is send to the parent or an SMS is sent to parents. Also if parent wish to see the student performance, parents has to visit the dedicated website with login in to the system.

Sameeh Ullah and Fakhri Karray in 2008, describes a speaker independent accent based natural language call routing system[2]. This system directs the customer calls to the automatic speech recognition system that is suitable to recognize the input query. Accent identification is is required for improving the performance of the natural language call routing system. For this clustering algorithm is used in which a distance metric learning approach, data points are transferred to a new space where Euclidean distance between similar and dissimilar points are at their minimum and maximum respectively. Hybrid clustering approaches improve the performance of the accent classification module in IVR systems.

In 2009[3], Chang-Xing QI, Qing-Dong Du represented a smart IVR system based on application gateway. A IVR system that brings the interactive information by application gateways that communicate between the call center and business information system. This system is based on the function of traditional call center. The application gateway and the IVR system and the information system background resolve the question of format conversation among the various systems in company.

Chang-Xing Qi, Jie Liu, Hang Li in 2010, describes the statistical regression algorithm. In this on the number of node visited it generates the dynamic menu of the IVR[4]. The voice files of data demanded are built and played for response through application gateway, TTS and IVR system together. To improve the service and market capacity, modern enterprises are using call center. As a part of call center, the IVR system can bring customers data voices and relevant information by pressing the keys on the normal telephones and entering the required request information. By entering the required information, the IVR will visit the resource of the call center and retrieve the required data information and send the query result to the IVR system and build the voice files by TTS. And this is played to the customer through telephone or sends a text files by fax.

Mudili Soujanya and Sarun Kumar developed the personalized IVR system in contact center in 2010[5]. To develop this speech application software development toolkit used to provide an efficient speech interface, asp.net to supply the requested information to the Microsoft server and interact with the database to process the request of the customer. This is used to provide the service to the customer in accost effective manner without discarding the customer. There are two types of IVR system used touch tone and speech enabled. Touch tone IVR provide the service by having callers select from a list of options using touch tone keypad and speech enable IVR system provide service by having caller select from a list of option by speaking an option or by speaking a keyword.

In 2010, Shanchuan Xu, Wanlin Gao, Zhen Li, Shuliang Zhang, Jianing Zhao proposes a hierarchical system of reusable IVR[6], which reduces the dependence between models and uses XML files as configuration file to make the IVR easily change by modifying the XML file. The new IVR system design which makes IVR system independent from requirements and become a reusable, configurable system as a module of call center.

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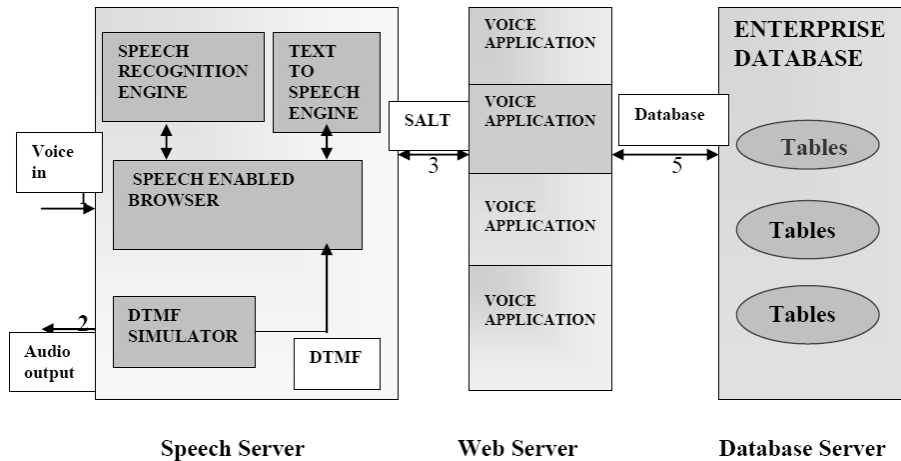


Fig No. 1 Architecture of personalized IVR system

Comparison of touch and speech-enabled IVR system in low literacy user[7] given by T. jama Ndwe, Mqhele Dlodlo, Jeffery Nichols in 2010 address the feasibility of using the telephone as a tool for information access in the technology challenged and illiterate communities of south Africa. An IVR system is designed for delivering care giving health information using a telephone. This used a DTMF and speech enabled IVR system.

In 2012, Seema Mishra, Apeksha Chavan and Swapnil Gourkar proposed a interactive voice responding system for educational institute[8]. This system uses the pre-recorded information or computer generated voice response to provide information in response to an caller. The input may be given by touch tone or by the dual tone multi frequency signal.

In 2012[9], Santosh Kulkarni and A.R. Karwankar designed a IVRS for college automation which uses the DTMF signal which generates when a caller presses a key of telephone set. This system uses the goertzel algorithm. When a caller dials the number then the technique used for identifying frequency components of a signal is goertzel algorithm. It is digital signal processing technique for identifying frequency component of a signal.

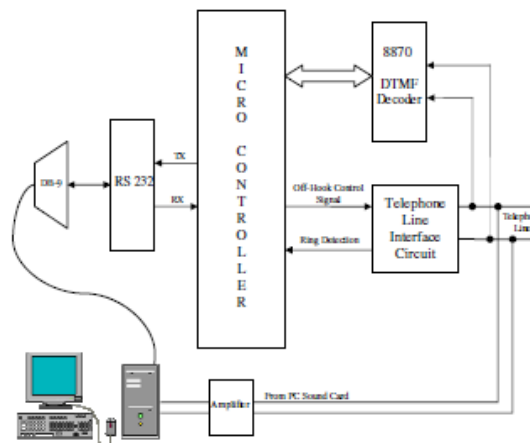


Fig No. 2 System diagram for college automation

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Dusan D. Grujic, Aleksandar R. Milic, Jovana V. Dadic proposed application of IVRS in e-learning system in 2012[10]. In this an interactive voice response solution is used within system for e-education. One of the methods used is open source system for learning the process management is modular object oriented development learning environment. And the system is IVR e-learning which is based on voice synthesis. A speech synthesis means artificial generation of human voice. A computer system used for this purpose is called voice synthesizer and it can be implemented in a suitable hardware or software.

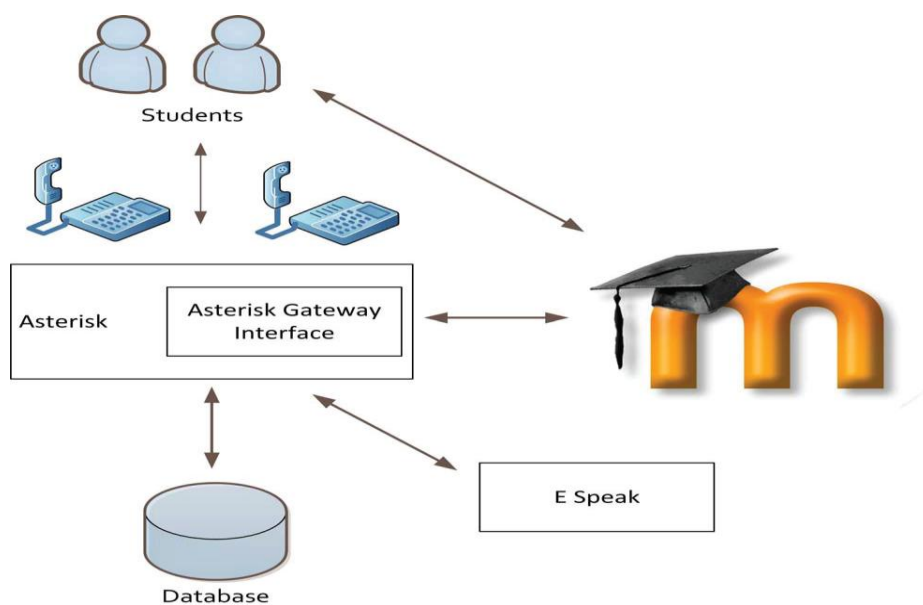


Fig No. 3 Infrastructure of an IVR system for e-learning

In 2012, A comprehensive study of design, development and implementation of an automated IVR systems[11] is proposed by Mr. Ritesh Chauhan, Mr. Vivek Joshi. This system serves the bridge between people and computer by connecting the telephone network with instructions. The IVR uses the pre-recorded or computer generated voice response to provide information in response to an input from the telephone caller. The input may be in terms of touch tone or DTMF signal, which is generated when a caller press a key on telephone.

T.J. Ndwe, Etienne Barnard describes that the access to information and communication is one of the most important need in any population group in 2013 in correlation between rapid learn ability and user preference in IVR systems for developing regions[12]. This retrains to those who are either poor or illiterate or without having knowledge of computer. Hence the user choice of interaction modality between dual tone multi frequency and speech enabled IVR modalities and correlated the results with learn ability of the different modalities.

III. CONCLUSION

In this paper, we have reviewed different voice responding techniques in various fields. Every system has its own importance. According to the above literature survey, we are using automatic voice responding system in educational institute. We are going to implement AVR system for parents of students by using the Raspberry Pi and GSM module. AVRS for parents of student is used in educational institute to inform the student performance in institute to the parents without visiting the college and without human interaction. By using this system it is convenient to get the student details easily to anyone and at any time. By using the Raspberry Pi, there is scope to optimize different methodologies in college automation to make system more users friendly and wide application areas.

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REFERENCES

1. Aysha Qaiser and Shoab A Khan, "Automation of time and attendance using RFID systems" IEEE-ICET 2nd international conference on emerging technology, 2006.
2. Sameeh Ullah and Fakhri Karray, "An evolutionary approach for accent classification in IVR systems" IEEE international conference on systems, man and cybernetics in 2008.
3. Hang-Xing QI, Qing-Dong Du, "An smart IVR system based on application gateways" ninth international conference on hybrid intelligent systems , 2009.
4. Chang-Xing Qi, Jie Liu, HangLi, "Application research of statistical regression algorithm in the IVR system" international conference on educational and network technology 2010.
5. Mudili Soujanya, Sarun Kumar,"personalized IVR system in contact center" internal conference on electronics and information technology, 2010.
6. ShanchuanXu, Wanlin Gao, Zhen Li, Shuliang Zhang, Jianing Zhao, "Design of hierarchical and configurable IVR system" 2nd intern. conference on computational intelligent and natural computing 2010.
7. T. jama Ndwe, Mqhele Dlodlo, Jeffery Nichols, "Comparison of touch and speech-enabled IVR systems in low literacy users" international conference on user science engineering 2010.
8. Ms Seema P Mishra, Ms Apeksha S. Chavan, Swapnil S. Gourkar, "Interactive voice response system for educational institution" international journal of advanced engineering technology, April 2012.
9. Santosh A. Kulkarni, Dr. A.R. karwankar, "IVRS for college automation" international journal of advanced research in computer and communication engineering vol. 1, issue 6, August 2012.
10. Dusan D. Grujic, Aleksandar R. Milic, Jovana V. Dadic, Marijana S. Despotovic-Zrakic, "Application of IVR in e- learning system"20thtelecommunication forum TELFOR 2012.
11. MR. Ritesh Chauhan, Mr. Vivek Joshi, Prof. Aanchal Jain, "Acomprehensive study of design, development and implementation of an automated IVR systems" international journal of computer science and information technology and security vol. 2, no. 6, December 2012.
12. T.J.Ndwe, Etienne Barnard, Thato Foko, "Correlation between rapid learnability and user preference in IVR systems for developing regions" internal information management corporation, 2013.