



## Monitoring Unscheduled Leaves using IVR

By Syed Usman Ahmed

*Aligarh Muslim University*

**Abstract-** Leaves are inherent part of a work and employees do take leaves at some point of this work life. Different types of leaves are provided by various employers in India. Some leaves are more informal in nature (also called as unscheduled leaves) compared to formal type of leaves (also called as scheduled leaves), one such unscheduled type of leave is Causal Leave (CL). These leaves are availed by employees in case some causality occurs with him/her or in his/her known ones. As the nature of CL is more of informal, it is believed that employee can take it as and when required and inform the authorities when he/she resumes his/her work. Currently most of the leave applications available are either in form of proforma (paper based) or web-based (online system). Many employees at the time of taking CL do not have both this options available, so even if they wish to inform about their leaves they have no mechanism to do so. Through this paper, we will to explore Interactive Voice Response (IVR) based Leave Management wherein we can provided a third option by high he/she can register his/her CL in his/her organization.

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**GJCST-C Classification:** *H.5.2, B.4.2*



*Strictly as per the compliance and regulations of:*



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## I. INTRODUCTION

Interactive Voice Response (IVR) systems began to appear in various organization in early 1990's and subsequently by various refinements in both telephone and computer based technology it has expanded its range of traditional fax and e-mail based applications that were used across that the organizations.

IVR based systems today, covers various features like speech recognition, Voice over IP telephony and IVR-Web host integration etc. In this paper we have discussed a possibility of using IVR for managing a special type of informal leave, causal leave, in an organization efficiently. Skilled class employee in any organization is more comfortable in handling phones and it is easy and cost effective to integrate the exiting telephone network with Automatic Speech Recognition (ASR) system or Interactive Voice Response (IVR) systems.

This paper studies various ways in which IVR can be implemented in efficient and effective way to benefit peoples in their day to day works. Also it proposes a mechanism that can be used in various offices and department in order to apply for unscheduled leaves like CL or Sick Leave and validate the request, so that an employee even with a minimum knowledge of operating a phone can avail his/her

informal leaves at the same time his application is officially recorded for future analysis.

## II. RELATED WORK

Interactive Voice Response (IVR) systems can be implemented with three different types of inputs, namely: simply digit recognition, simple command recognition and as full sentence recognition inputs. Dual-Tone Multi-Frequency (DTMF) is a touch tone technology used in pushed button telephone systems. In case of simple digit recognition system, we capture and recognize only digit from one to nine, whereas simple command can capture some basic but discrete commands like "yes", "no", "next" etc. Implementing a full sentence system is more complex than the two types mentioned earlier, as it involves capturing continues input rather than discrete input. The DTMF input system can be implemented in simple digit and simple command recognition system [1].

The query based system [2] developed at IIT Guwahati enables users to access the latest price of the commodity by calling the system using a landline/mobile phone. It implements a Spoken Query (SQ) system which consist of IVR and ASR modules which was developed using open source resources.

As per Madelaine Plauché et al [3] speeches driven approach have been suggested as a key universal access in countries like India, where two-thirds of the 870 millions illiterates in the world today are found. Unlike traditional speech technology techniques their design addresses the problem of multilingualism, literacy and linguistic variation. J. Sherwani et al [4] presents a prototype for speech-based health information access, for community health workers in a rural health sector. Their design consists of a VoIP interface and a Microsoft Speech Server.

A comparative study of use of speech and DTMF keypad for navigation was done by Kwan M. Lee et al [5]. Their results indicate that DTMF is more effective and efficient for linear task whereas speech is better for non-linear task. DTMF is advantageous as it is instantaneous and 100% accurate, however the other side of DTMF is that it is severely constrained. Speech input on the other hand is highly unconstrained but often misrecognized.

Delogu et al. (1998), compared the use of simple speech input and DTMF and found no difference in terms of task completion time and the number of turns per task when comparing DTMF input for an IVR

**Author:** Department of Computer Engineering, Aligarh Muslim University. e-mail: [usmanahmed.csc@gmail.com](mailto:usmanahmed.csc@gmail.com)

system with the three aforesaid types of speech inputs. Foster et al. (1998) also carried out a similar study that showed that user prefer connected word (CW) speech input (in a CW-based system, users say a string of words after a system prompt, without any pause required between the words) and DTMF input system to an isolated word (IW) speech input system (in a IW-based system, user say one word after a system prompt).

### III. PROPOSED APPROACH

Most of the organization across India, categorizes unscheduled leaves from the work that is not requested or approved in advance. Unscheduled leave could contribute to increased compensation expenses by requiring management to increase work-hours and overtime hours [6].

In this paper we propose a method by which we can monitor unscheduled leaves that could potentially affect productivity, efficiency, costs and employee morale.

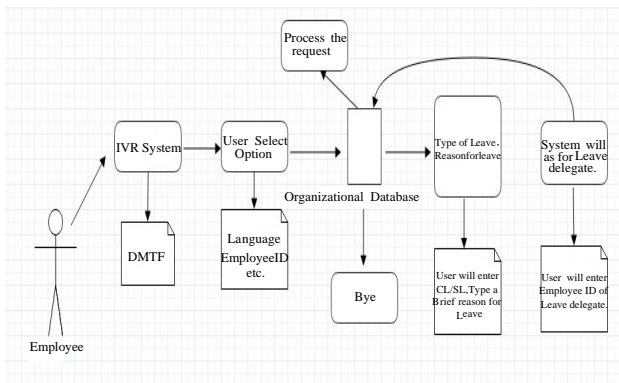


Figure 1: Flow Graph for the Proposed System

The proposed system is shown in Figure 1 above. As per the figure:

1. An employee of the organization will have to call the IVR system on a designated number provided by the organization.
2. With the help of DTMF, he will select the options as Language and type of employee (e.g. permanent, temporary, adhoc etc.).
3. The employee will enter his/her employee identification number.
4. Once the employee will enter his/her employee identification number, the organizational database will be searched for his validity.
5. If not found valid, the system will exit.
6. Else, the system will ask for type of leave and reason for leave.
7. As this is an unscheduled leave and it may hamper the work, the system will ask for entering a leave delegate employee identification number who can work in his/her absence.

8. The system will again check the database for validity of leave delegate and if found fit will process the request and store the request in the organization database. Else, process step 5.

The pre-requisite for the aforesaid method is a pre-populated database with employee identification numbers. This method will lead to the following types of matrices.

- a) No. of unscheduled leaves availed vs scheduled leaves availed by an employee.
- b) Cost vs productivity of the employee.
- c) Employee morale in case of scheduled vs unscheduled leaves.
- d) Efficiency of an employee.

Based on these matrices, we can calculate the variances in the process of unscheduled leaves and streamline the process accordingly to increase the efficiency, productivity and reduce the cost incurred due to unscheduled leaves.

### IV. CONCLUSION

The proposed system will automate the process of unscheduled leaves application by using IVR. It will not only help organization with capturing data for future analysis but also will greater efficiency lots employees who cannot fill leave application or use web based application can use the IVR system.

This system can be enhanced in future to incorporate simple word or IW-based IVR system or CW-based IVR system. Moreover, once we have all three systems in place we can do a comparative study and analyze the efficiency of these systems in any organization.

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