

Chatbot For Efficient Allocation and Management of College Laboratories

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Abstract— Chat-agents commonly known as the chatbots have gained immense attention from multiple fields. It is basically the participants' queries and the responses received. Here in this paper we have discussed about having a chatbot in educational institution. When considering an institution regardless, whether it is a school or university it is consequential that the students are edified in a congruous environment. This generalizes that the infrastructure should fascinate every requisite as cardinal or required by the students or the faculty in that environment. Present day process implies that all the work is done manually and is bound to wreak mistakes. In order to minimize the mistakes it is predictable to have a computer availed web-predicted system that will invigilate the infrastructure allotment taking these factors into consideration. The system will thereby contribute in reducing the manual efforts taken by the time-table coordinator and also the time taken for the process. We aim at providing a system that will be effective for institutions, so that henceforth rather than doing the work manually, the system will be made use of.

Keywords—Infrastructure, system, institution, environment.

I. INTRODUCTION

Chatbot for Efficient Allocation and management of laboratories is a system that is being developed to minimize the workload on the staff that is responsible for generating or preparing the allotment of infrastructure taking into account the heterogeneous factors that are essential for the respective system. Basically the chatbot acts as the agent designed to have an intelligent conversation in response to the user queries.

Here the based chatbot will act as a mediator between the user and the system. The chatbot will receive queries from the user and will respond to the particular queries in return. This system will make the process of infrastructure allotment easier

and thereby reduce the manual work. The requirements that are taken into consideration include the following:

A. Software Required : The labs wherein the sessions will be conducted must satisfy the most crucial requirement, that is the software required for the lab session to be conducted. In the case of dynamic changes it is tough to find or locate the lab which has the same software on the computer systems.

B. Student Capacity : Student capacity is the second requirement that must be taken into consideration. Even if the located lab fulfills the criteria of appropriate software it is essential that the number of students that the lab can accommodate must also be checked. It is difficult to manage if the number of students the timetable manually. The timetable coordinator has to try out a number of permutations and combinations to generate a scheduled timetable. It fixates on the efficient

C. Hardware Requirements : Along with the software requirements the hardware requirements must also be taken care of. When conducting a hardware lab session (For example: when conducting an IOT lab some external components are required such as wires, cables, breadboard, sensors, etc). Due to this requirement the hardware factors must be checked in advanced. Based on the system proposed it is regarded that it can be effectively used by colleges and schools:

1. Schools : Just like in colleges where the proposed system can be acclimated to allot the labs when necessary, it can also be used in schools. In schools the system can be made use of for allotting the classrooms instead of labs. Here only in place of the lab requisites the subject requisites shall be specified.

2. Colleges : In colleges the system can be used for the lab allotment process. Not only when generating the timetable but also when, in the case of dynamic changes in the schedule or timely changes.

II. LITERATURE SURVEY

In literature[1], the author has implemented an Automatic Timetable Generator software that is utilized for the Purpose

of generating timetable automatically. The software is based on JavaFX. The author has made use of a Genetic Algorithm for the implementation of the Automatic Timetable Generator. In here the Timetable scheduler aims At Developing a software for the college to manage the timetable formation. Also it is implemented for the purpose of minimizing the errors that are encountered when the entire process is done manually. It is meant to be The comprehensive timetable management solution. The system focuses on resource optimization. Here the factors that are accounted while displaying the output are as follows: Input Interface, Database Capabilities and Processing Capabilities and lastly the System architecture respectively. The implemented system is able to solve the 'Lecture-course timetabling problem'. Also the constraints that the system is able to satisfy or fulfill are: the time slots for any subjects do not overlap each other, there is minimum one hour gap between the lectures of one faculty, the timeslots of the faculty are not repeated.

In literature[2], the author has designed aTimetable Generation and Leave Management system. Here the timetable generator manages

the generation of timetable automatically whereas the leave management system handles the leave application of the faculty members. In this system the admin will have to login to the system and the faculty details will be entered into the system prior, depending upon this data the system will generate the timetable accordingly. The leave management system here is integrated with the timetable generation system and thereby manages the leave applications of the faculty members in the institution respectively. In the leave management system, cancellation of the leave option is also available making it easier for the faculty to make any required changes without undergoing a specific procedure. Also it makes use of a scheduling algorithm. This system has aimed on developing a practical approach for the construction of lecture-course timetabling system. In the system the authorized users are only given access. The administrator is the chief user. Only the administrator has the right to access to the database and alter or make changes in the existing infrastructure. The system has a friendly user interface so that the users are able to use the system in an effective manner.

In literature[3], the author has implemented an Automatic and Effective Allocation for Examination Seats using Android Application. In this system the admin will receive a document which comprises of the student exam number and the subject name by the university. To check about the block number that is assigned to them, the students as well as the faculty must login to the system. They will have unique id's for the login purpose. The allocation will be done taking into account factors such as: number of the students, size of the block, and the paper code respectively. The students will there by be allotted into a classroom depending on their strength. Faculty members will also be assigned specific classrooms .The allocation of faculty members will be done randomly on the basis of their department. The system will

notify the students and staff regarding the classrooms that have been allotted to them. The allocation of the students and the faculty members is done using an algorithm called as Parsing algorithm. It is an Android based application. The system can further be used for future implementations as well.

In literature[4], the Software Engineering Approach Timetable Generator system is being implemented by the author. In here the prime objective of the author was to implement an online application. This system allows the user to generate a timetable of his/her choice according to the choices available, that best suits the user. The main purpose of the system is giving users the flexibility to choose the timetable as per their preferences. This is the major change from the other systems that are available or being implemented. For the purpose of implementation a commercial CASE tool along with a UML notation. The step-by-step analysis, implementation and design are done with the help of the above techniques. The management of the database is done online by the administrators. The software specifications considered are: The initial design specifications, First refinement of design specification, the potential list, DFD that is used for the timetable generator, a use case diagram and last but not the least the class diagram.

In literature[5], that is the Review of Integrated Applications with AIML based chatbot the author has implemented a chatbot with the help of ML. In comparison to the other systems this system has been implemented with a different approach. This system was easy to use as a user friendly GUI was utilized for the designing of the interface. The system can be used very efficiently and effectively in case of the small scale implementations. Here the prime factor that made the system more effective Is the use of AIML algorithms for the implementation. The system can handle some integrated applications as well. Although the system has a great implementation on the smaller applications, it faces a problem when implementing for larger applications or complex Applications. Further changes or restructuring of the system can be done in order to enhance the features and overcome the shortcomings in the existing architecture respectively. The implementation of the existing Architecture is done wherever necessary in the real world.

In literature[6], the author has developed a Artificial intelligence chatbot that could be used in the medical field. It is a chatbot that helps the users gain information about any kind of medicine. Also the chatbot helps in providing age wise medicine dosages to the patients. The aim of developing the chatbot is that the users can be aware about the disease that they are facing bu just entering the symptoms that they are facing. It has a effective disease prediction depending on the symptoms. Also the system can be integrated and upgraded easily so that the users do not face any problem in utilizing it. AI is the one that helps the chatbot in predicting the disease. Along with easy integration it is also taken care that the chatbot is working in cross platforms.

III. PROBLEM STATEMENT

Commencement of placement drives or any of the academic program or workshop without any prior notice results in the shortage or sometimes leads to the unavailability of the infrastructure resources. This heads towards a stressful situation and inculcates a hustle in the convection as well as the schedule as manual coordination and faculty coordination is involved for making any subtle changes. To overcome this quandary we will be providing a web based application for efficient allotment of infrastructure. 'Chatbot for Efficient Resource Allocation' will be integrated with an AI chatbot for utilizer interaction. Our solution will provide comfort to the manpower and will evade hamper in academics. The system will be implementing the given input queries and the data in the database will be processed and based on the processing the chatbot will display the output. As mentioned earlier, various factors will be taken into consideration. The data regarding the lab capacity, which lab contains will software and even the hardware specifications are given to the database in prior.

IV. TOOLS USED PRIORLY

A chatbot can be trained as per the requirements of the user. It can understand human language and respond accordingly when any questions are fired to the chatbot. A chatbot can be trained in a number of ways depending upon the user requirements. The tools or platforms that can be used for the generation of chatbot include the following:

1. Morph.ai : It is a platform wherein the chatbot can be trained as per the user requirements. It allows us to customize the chatbot, the user interface as per our necessity. It also supports other chat Services such as: Messenger, Twitter, Skype, Slack, etc.

2. Flow XO : Here for implementing the chatbot it is not necessary that the user must know how to code. This makes it more simpler for the user to design his chatbot flexibly. With the help of Flox XO the user can integrate chatbot with many third-party applications such as: Buffer, Github, Gmail, JIRA, LinkedIn, Mailgun, StatusCake, etc. .

3. SnatchBot : SnatchBot allows the user to build chatbots for free. It has its own unique NPL engine, and it can be coordinated in about 135 languages. Its Interfacing is also very easy, just like the FlowXO here also the coding is not necessary. It Allows to build free chatbots on Platforms such as: Telegram, LINE, Facebook Messenger, Skype, Websites, Viber, and other channels.

4. Botsify : Botsify allows the user to create a single chatbot for upto 100 users in a month for free of charge. It has got a plugin for Wordpress website. It also supports audio and video files to Integrate with the medium.

5. API.AI : It creates a chatbot in three efficient steps: Design, Connect, and Launch. It supports cross platform like HTML, Node.js, IOS, Python, etc. It currently supports 14 languages

and along with that it can be integrated with the following: Slack, Skype, Twitter, LINE, Cisco Spark, Kik, Telegram, Amazon Alexa, SMS, Agent Demo, etc.

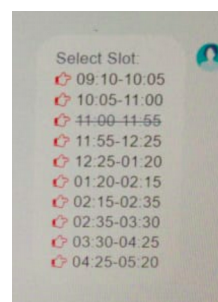
V. METHODOLOGY

The proposed system will merge with other specific components when the implementation comes into the picture. On the basis of the current architecture the new system will be implemented or designed in such a way that the application is able to satisfy all the user requirements in an efficient manner. The comparison of the existing system with the new system architecture is made so that the shortcomings of the existing architecture covercomes in the new implemented structure. The chatbot will be able to do the following:

1) Each user will have a login of its own. This enables that the users have their own space and they can ask their queries accordingly.

2) The admin will be able to see all the conversation in his account. Here as per the bookings made by the users the admin will be able to export the bookings into the database.

3) Also if a particular session is booked the booking for that particular session will be stricken off.

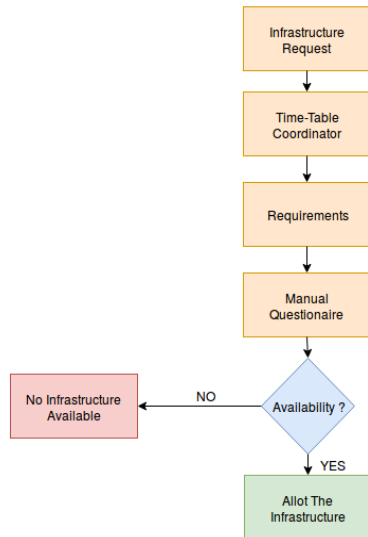


4) The chatbot will be able to feed its entry into the database.

Previously a chatbot has been designed that was developed for managing the queries regarding University. It is named "Chatbot for University Related FAQ's". The only difference was that in there the queries were about the university.

1. EXISTING SYSTEM ARCHITECTURE.

In the existing architecture the work is done manually by the timetable coordinator. The timetable coordinator requests for the requirements that must be fulfilled by the system. The coordinator comes to know about the requirements by conducting a questionnaire with all the concerned faculty members and the HOD'S of the respective departments. Once the requirements are known the coordinator schedules the timetable and finally checks the availability of the infrastructure. If the concerned infrastructure is not available then, the corresponding session is not allotted there, on the other hand if it is available, the allotment is finalized.

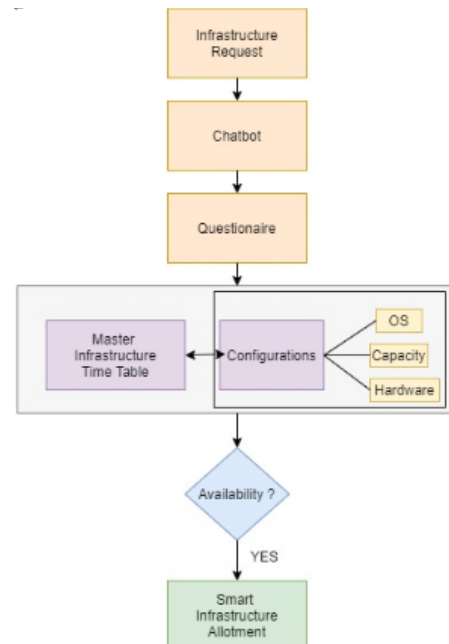


EXISTING SYSTEM ARCHITECTURE

Here the timetable coordinator only has the authority to make any required or subtle changes in the planned schedule. Even if the changes are Suggested by any other faculty members the final call will be made by the timetable coordinator only.

2. PROPOSED SYSTEM ARCHITECTURE.

In proposed system all the work that is done manually in the existing architecture will be done with the help of application. The time required by the timetable coordinator will be reduced and it will also simplify the complex task. The proposed system architecture can be used in all the colleges so that the allotting process of the labs is done with the help of this architecture and not manually. The manual process is a hectic process and also in case of any subtle changes it becomes difficult for the timetable coordinator to manage the changes. In the proposed system, the master timetable will be provided as an input to the application and based on that the questionnaire will be conducted in the chatbot. The specific requirements are taken care of, such as: OS, student capacity, Software requisites, and others. the chatbot will then provide options based on the data that is fed prior in the database. It is the users call as to which alternative he has to choose.



PROPOSED SYSTEM ARCHITECTURE

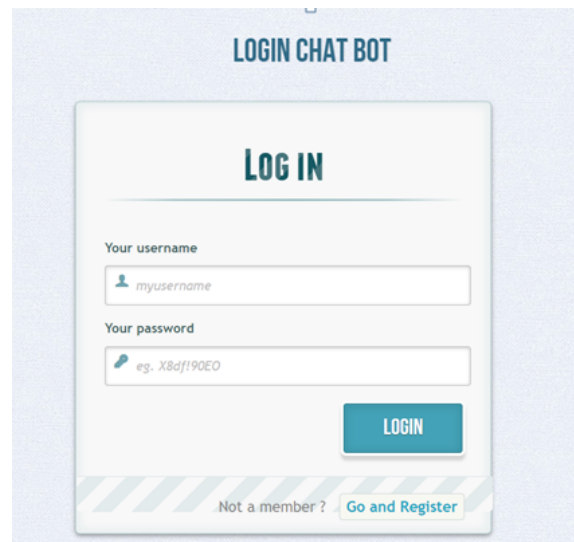


Figure 1.User Login

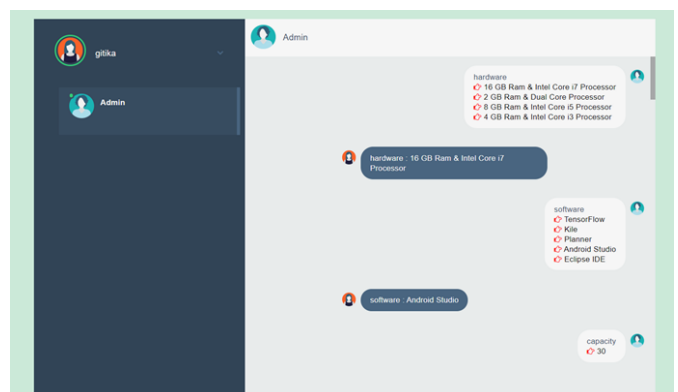


Figure 2.User interaction chatbot (part 1)

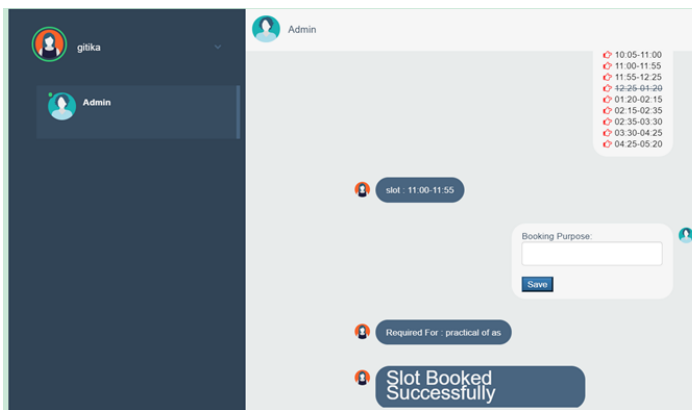


Figure 3. User Interaction with chatbot (part 2)

VI. CONCLUSION

The prime objective behind this system is to reduce the manual efforts and thereby implementing an effective architecture. Also the proposed system will evade the hamper caused in the academics due to any sudden or subtle changes. It will avoid the inconsistencies visually perceiving that no lab session is missed due to any reason by providing alternate infrastructure options. Additionally features provided like reservation and dynamic allocation due to any activities. The system will be far more effective than the existing system and has greater implementations. Rather the labs it can also be used for the allotment of classrooms in schools and colleges.

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