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Online Debating System With Text To Speech Conversion

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Abstract: *In this paper, a project has been presented in which there will be real time debates going on the website in which only those users can enter who have registered using their voice. Every user gets one minute speaking time where no other user can interfere. After every speaker has spoken for one minute the portal will be open to take in speakers who want to speak more the given topic. A list will be maintained of the upcoming speakers and will be visible to all the users in that particular debate. The portal will only be open for one user at a time. Other users will be muted but will be able to hear the debate.*
Keywords: online debating; speech to text conversion; software engineering; voice recognition.

I. INTRODUCTION

The aim of this project is to be able to create a portal on which only registered users can login through voice recognition and real-time debate on selected topics with people across the world and have a successful debate and reach a conclusion. End users of your project: All the general public as well as the rest of the people who all access to internet and know how to use the portal.

The scope of this project is as follows-

1) Awareness among the users about the new upcoming topics.
2) Users get to share their opinion over an online portal.
3) In future can be used to conduct inter-Country meetings regarding important topics using a secret portal inside the website.
4) Unanswered questions can be answered taking into consideration of everybody's opinion.

This has many real time applications such as allowing a news channel to conduct nation wide debates. The main beneficiaries of this system are those who like debating and sharing their opinion as they now have a platform where they can debate and find questions to unanswered questions at home. As a result of the deployment of this project, awareness about important topics will be spread around the country.

II. LITERATURE REVIEW

There are numerous present works in the field of online debating and communication. People in the field maintain that online discussion gives participants the chance to research, think through and frame their responses that is not possible in the traditional face-to-face debates (Harasim, Hiltz, Teles, & 96 IJEDICT Turoff 1995). Further, Boughey (1997) claims that the act of writing and typing responses, instead of responding verbally, also increases learning since the writer has to consider, clarify and revise his thoughts much more carefully than if they had not been written down. Another possibility is that a system like this could be used to develop the argumentation skills required by students at various levels of education. As Marttunen and Laurinen (2001, p. 127) note: "Argumentation and debating skills are needed when engaging in academic discussion, where it is essential to be able to assess the strengths and weaknesses of other peoples' standpoints, and to formulate one's own positions supported with relevant and adequate grounds". Their study suggests that these skills can be enhanced by short-term e-mail and face-to-face teaching. Lea and Street (cited in Macdonald 2003) state that familiarity with the language of a discipline and the academic genre is essential for students to communicate within an academic discipline. As online debating exclusively requires students to type online messages asynchronously, allowing time for drafting and redrafting of arguments, it can be concluded that online debating could particularly helpful.
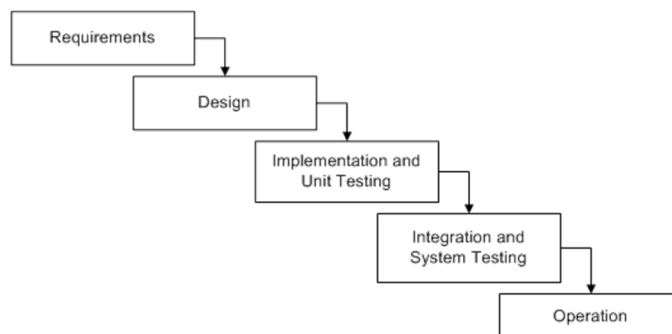
III. PROJECT PLAN

The original plan for this project was to implement debates online through speech to text conversion in real time which is very efficient as it saves time and money of traveling.

The initial activities involved basic modules such as logging in, opening links to access a live debate and thus either participating for or against the topic done via either typing in chat box or through speech to text conversion which is posted in the chat box. The chat box also contains the participants name the the stance that he is taking.

The next part of the plan was to post the upcoming debates for the day so that all users which have or haven't logged in can see that and accordingly come online and access the debate only if they are registered users.

Therefore a model was prepared which saves time, money and also the effort to type big paragraphs, and all this had to be done with minimal latency which was achieved till a point.

The process model used is the waterfall model. This model is being used as there are predefined GUI screens and since it is a web based project, different modules have to be determine before hand prior to linking the various screens that are available to the user.

IV. RISK MANAGEMENT PLAN

A. For product size risks

Sr.No.	Risk	Effect of Risk	Action Plan
1	Size of database created or used by the product?	Bigger size of database may lead to congestion in network.	Assigning supercomputers or clouds to hold database of software
2	Number of users of the product?	Many users in the same portal of debate may lead to a slow debate and lags if anyone has slow net.	Thus assigning number of members/participants to each portal and using an algorithm to make sure users in the portal all have a good net connection.
3	Number of projected changes to the requirements for the product? Before delivery? After delivery?	According to the testing and end users changes may occur due to change in requirements or needs of software.	Thus changing or moulding the software according to needs of end user in testing phase as editing takes place.

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 6 Issue IV, April 2018- Available at www.ijraset.com

B. For business impact risks

Sr.No.	Risk	Effect of Risk	Action Plan
1	Visibility of this product to the world	Bigger size of database may lead to congestion in network.	Assigning supercomputers or clouds to hold database of software
2	Number of customers who will use this product and the consistency of their needs relative to the product?	Many users in the same portal of debate may lead to a slow debate and lags if anyone has slow net.	Thus assigning number of members/participants to each portal and using an algorithm to make sure users in the portal all have a good net connection.
3	Number of other products/systems with which this product must be interoperable?	According to the testing and end users changes may occur due to change in requirements or needs of software.	Thus changing or moulding the software according to needs of end user in testing phase as editing takes place.
4	Sophistication of end users?	Some end users may not be able to understand the working of software and may leave it in between while using it.	Proper documentation and ease of using the website and making it user-friendly helps to overcome such a risk.
5	Amount and quality of product documentation that must be produced and delivered to customer?	Sometimes if the proper documentation is not provided to customer then he/she may not be able to understand the GUI and the user interface.	Thus a proper SRS documentation must be provided prior to the customer and proper user-friendly GUI must be made and provided to the customer.
6	Costs associated with a defective voice recognition	The voice recognition would have to be made again which will lead to increase in costs and delay in delivering of product.	Testing along with implementation and using extreme programming may reduce the probability for such a risk.

C. For customer related risks

Sr.No.	Risk	Effect of Risk	Action Plan
1	Does the customer have a solid idea of what is required?	If not then he may expect something else as end product than what is produced and may not use it and may lead to failure of product.	Providing proper documentation and releasing beta versions of the software and including end users in beta testing to reduce the risk.
2	Will the customer agree to spend time in formal requirements gathering meetings to identify project scope?	If not then the product may not be integrated and further extended to any other product thus leading to an older version to be stagnant.	Making the customers aware of the formal requirements and its future use in releasing new versions of the product and helping it to be upgraded regularly.
3	Is the public willing to participate in reviews?	If not then product may not be updated as per the use of the customer again leading to a stagnant product.	Making the customers aware of the reviews and its future use in releasing new versions of the product and helping it to be upgraded regularly.
4	Whether the public is able to understand how the portal works and how they have to login using voice recognition	If not then some may lose interest in the product and may not understand its working leading to some people not using the software.	Thus a proper SRS documentation must be provided prior to the customer and proper user-friendly GUI must be made and provided to the customer.

D. For development environment risks

Sr.No.	Risk	Effect of Risk	Action Plan
1	Is a software project management tool available?	If not then management may not be proper leading to faults in product.	Using software management tool to improve the management and working of the tasks.
2	Do analysis and design tools deliver methods that are appropriate for the product to be built in a better way	If not then designing may not be up to the mark and also faulty analysis may lead to many problems while development.	Thus proper time and design and analysis tools must be used for proper organisation and start to the building.
3	Are testing tools available and appropriate for the product to be built relating to voice recognition?	If faulty system is built with respect to voice recognition then hacking of accounts will be easy and system would be faulty.	Proper testing with different phases i.e. alpha and beta must be used thus to have minimum faults in the product.

E. For process issue risks

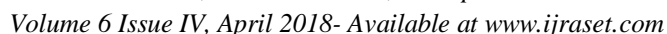| Sr. No.	Risk	Effect of Risk	Action Plan
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F. For technical issue risks

Sr. No.	Risk	Effect of Risk	Action Plan
1	Is the voice recognition software being able to be in sync with the web portal created for debating?	If not then it leads to the whole software to be faulty and thus people may not use it if revised also.	Making it in such a way that sync takes less time and is efficient using extreme programming this may be made sure to an extent.
2	Is the voice recognition system very accurate to distinguish almost similar voices?	If not then different people may enter in different users' accounts and may lead to bad database.	Thus to be made sure that the voice recognition is accurate enough using different beta versions, codes and testing.
3	User loses network at any point of time during the debate which causes the debate to be at a standstill as no other would be allowed to talk at that point of time when that particular user has his/her chance.	This may sometimes lead to standstill in debate and fault in system as the debate may stop at that person and for that particular time allotted to him/her the software may not do anything as no one speaks.	Recognizing and building such a code that the software recognizes the slow end user and removes him/her from portal thus for debate.

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 6 Issue IV, April 2018- Available at www.ijraset.com

G. For technology related risks

Sr. No.	Risk	Effect of Risk	Action Plan
1	Do the customer requirements demand the creation of new algorithms, input or output technology?	If not then no updates are created and better products may come into action, thus, making our software to be old.	Thus reviews should always be considered of high priority for further development of product.
2	Do requirements demand the use of new analysis, design, or testing methods with respect to voice recognition?	If not then the software may be older version with respect to voice recognition and may sometimes lead to faults in the product altogether.	Thus taking in to consideration all the updates and syncing them again if any one module is updated.
3	Do requirements demand the use of unconventional software development methods, such as formal methods, AI-based approaches, and artificial neural networks?	If such development methods are used then the system may take time to be built as all the backend coding will be updated with respect to AI interface and may lead to a product that is not expected by end user or programmer.	Not using such development methods until not sure of how to incorporate them in our product as AIs are self-learning to an extent.

H. For other potential

Sr. No.	Risk	Effect of Risk	Action Plan
1	Schedule is optimistic, "best case," rather than realistic, "expected case"	Sometimes the programmers use best case algorithms which lead to optimistic results in products but which is not needed by the user.	Using the expected case algorithms to produce a software with realistic approach rather than providing with algorithms which are best/easily used by programmer.
2	A delay in one task causes cascading delays in dependent tasks	If this happens then the product may not be delivered in time and users may lose hope from the product and may not use it later.	Ensuring good management causing no delays in any process or step involved in building the software.
3	Voice recognition part of the product may take more time than expected to design and implement it in the debating system.	If this happens then it may lead to delay in building a module thus causing the risk mentioned above of cascading delays.	Ensuring good management and analysis of how to build the software thus causing no delays in any process or step involved in building the software.
4	Facilities are available but inadequate (e.g., no phones, network wiring, furniture, office supplies, etc.)	If this happens then all the requirements and completion phases of the software may not be met.	Ensuring all the facilities are available if not then importing them to use and implement them based on our requirements.
5	A particular debate portal may be crowded leading to slow debate and if any one person's net is slow then whole debate gets affected.	If this happens then it may lead the whole database to react slowly and may lead to crash in software or online portal created.	Setting a standard in the code such that the user can enter and stay in portal if they have a particular net speed
5	Are all software tools integrated with eachother	If not then it may lead to crashes in software created and lead to hang ups in the screen of end user thus making the end user leave the software.	Ensuring using beta versions and testing that all tools are integrated and don't have bad link hich crashes the software.
	Is the customer technically sophisticated in the product area	If not then customer may not be able to understand the use and working of the product leading to him/her leaving the software and not using ait and having negative reviews	Making the user understand the software and how it works and why it is used and making such a user-friendly base such that such situations do not occur.
6	Meeting product's size or speed constraints requires more time than expected, including time for redesign and reimplementation	If this happens then again leads to delay in building of product and causing cascading delays.	Making the use of proper management and time allotment and required time for each phase in the analysis and keeping a buffer for errors thus reducing possibility of such a risk.

V. METHODOLOGY

Speech to text conversion is an integral part of the online debating system. The methodology presented here revolves around the functioning of speech to text conversion. The process is comprised of mechanism that records speeches of debaters, stores them in a database and further converts them into text to display to the opposing debater and the judge.

The system developed also provides a medium by which a judge can control the number of participants, disable unwanted members connected to the database and rank the debate quality.

A voice input is taken from the debater sitting in front of the electronic device displaying the website with all the details. Contextual metadata is received that converts the context recieved by the electronic device at that time. Numerous language models are used, where each base language model corresponds to a distinct textual corpus of content. Using the contextual metadata, an interpolated language model is generated based on contributions from the base language models. The contributions are weighted according to a weighting for each of the base language models. The interpolated language model is used to convert the received voice input to a textual output. The voice input is received at a computer server system that is remote to the electronic device. The textual output is transmitted to the electronic device.

VI. MODULES

A. Login/Register Module
This module is used by any free user to login or register on the website so that he is eligible to debate on the website and only after any of the above two steps the link to debate is enabled.

B. Home Module
It is used to describe the website, provide navigation, and describe the developers.

C. Live Debates Module
This module is used to inform the users of the current debate and only those users can participate in the debate who have already logged in or registered.

D. Upcoming Debates Module
This module is used to display the debates that will happen throughout the day along with the date, time and topic.

E. Debating Module
This portal is used by the users that have entered in the live debate and want to debate about the topic before which they have to choose one of the two sides for or against which is stored in the database and showed to other users on the same side as him. This module also includes a chatbox in which the whole debate is displayed along with which user said what at which time, so that it is visible to everyone else. In short, it keeps the log of all the points. Input to the chat box is done either through direct text or by voice to text conversion.

F. Log out module
It is used by users to log out.

VII. GANTT CHARTS

A gantt chart is a type of chart that shows a project schedule.

VIII. ARCHITECTUREAL DIAGRAM

The primary purpose of this diagram is to illustrate a specific set of tradeoffs inherent in the structure and design of a system or ecosystem.
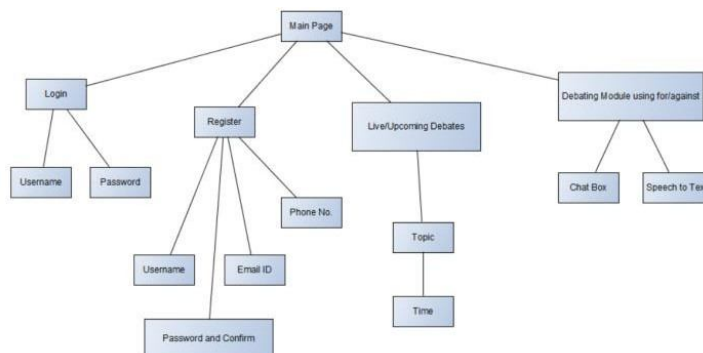

Figure 1-Architectural diagram

IX. UML DIAGRAMS

UML diagrams are used to describe the boundary, structure and the behavior or the system and the objects in it.

A. Class Diagram

This is the most common UML diagram. It represents the object oriented view of the system which is static in nature.
It consists of classes, interfaces, associations and collaborations.
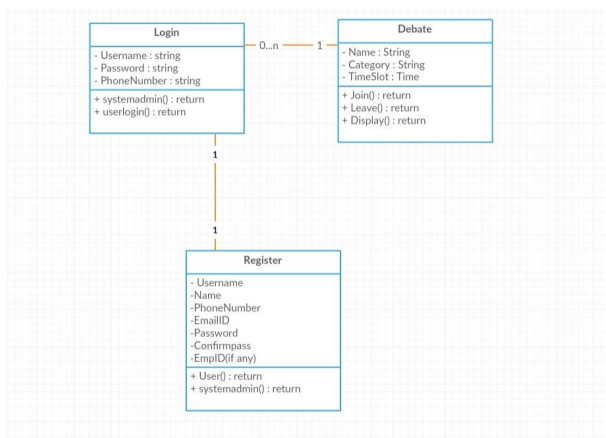
Figure 2-Class diagram

B. Use Case Diagram

A use case diagram is the simplest representation of a users interaction with the system. It is used to describe a set of actions that the system or external subjects can perform in collaboration with one or more external users of the system.
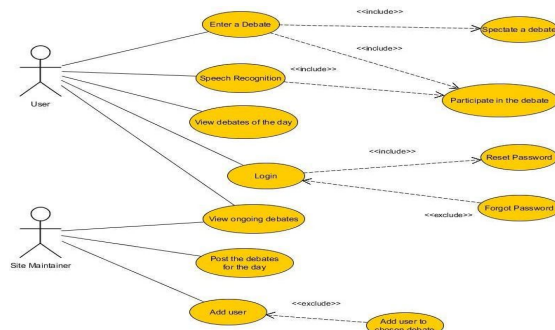
Figure 3- Use case diagram

C. State Machine Diagram

It is a behavior diagram which shows discrete behavior of a part of a designed system through finite state transitions. It shows the transitions between various objects. States refer to different combinations of information that an object can hold. Transitions show how a state changes, and they are marked by arrows that flow from one state to another.
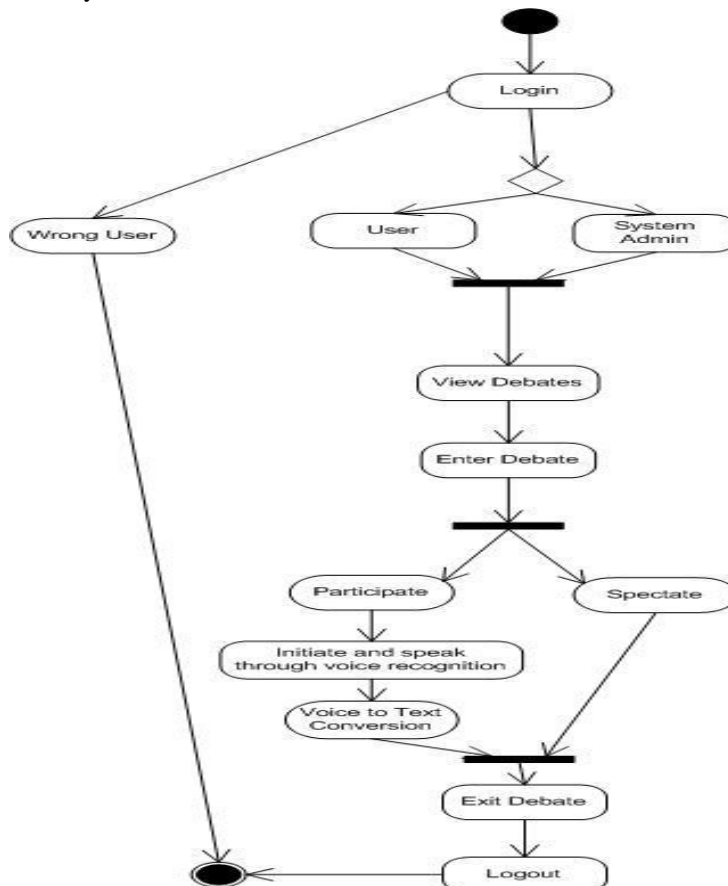
Figure 4- State machine diagram

D. Component Diagram

These are a special kind of UML diagram as it does not describe the functionality of the system but describes the components involved in the system.
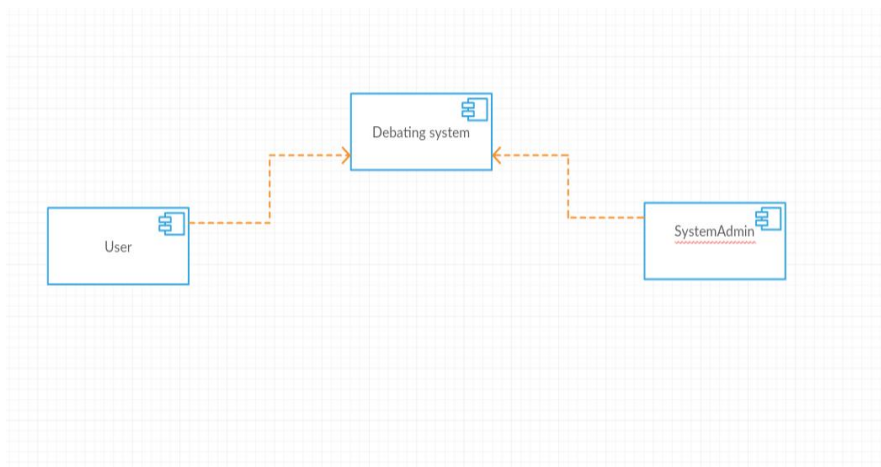
Figure 5- Component diagram

E. Deployment diagram

It is a structure diagram which shows the architecture of the system as the deployment of software artifacts to deployment targets. It models the physical aspects of an object oriented system. It shows the hardware of the system, the software installed on the hardware, and the middleware used to make the connections.
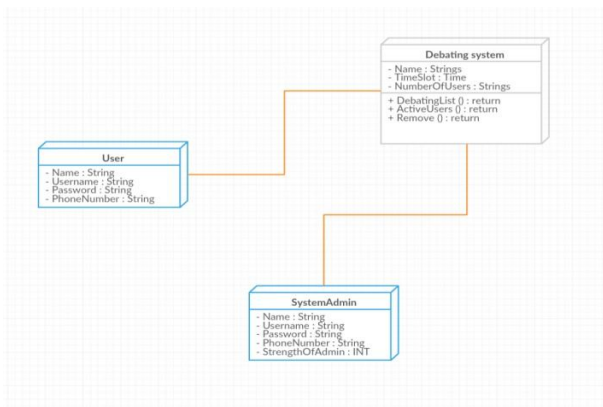
Figure 6 - Deployment diagram

F. Sequence Diagram

A sequence diagram shows object interactions arranged in a timed sequence. It depicts the objects and classes in the scenario as well as the messages that must be exchanged between them to carry out the functionality of the scenario.
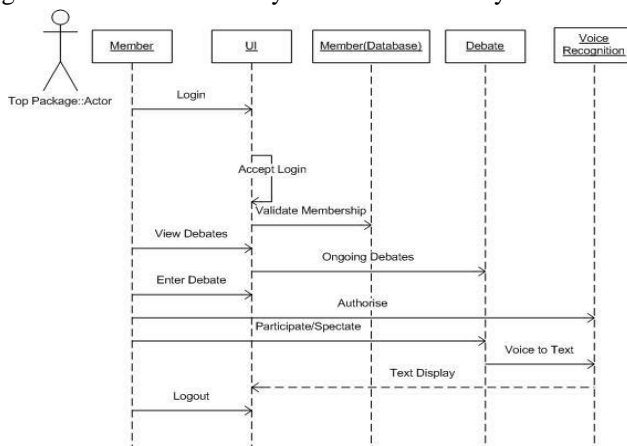
Figure 7 - Sequence diagram

G. Collaboration Diagram

It is a type of visual presentation that shows how various software objects interact with each other within the overall architecture, and how users can benefit from this collaboration.

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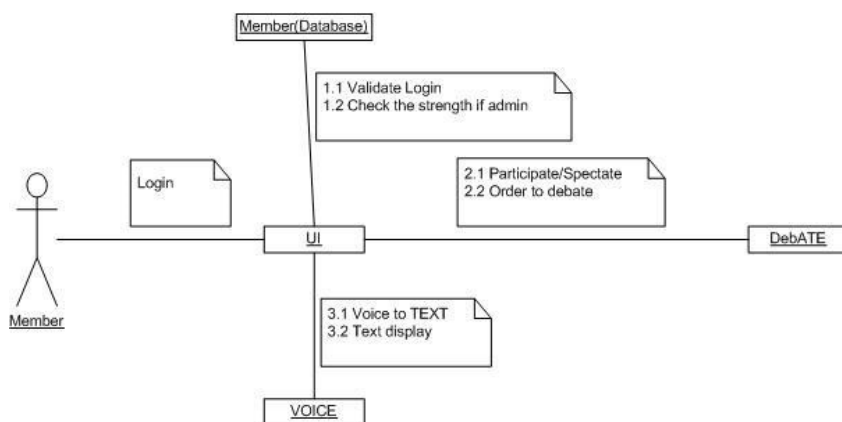
H. Activity Diagram

These diagrams depict the dynamic aspects of the system. It is basically a flowchart that depicts the flow from one activity to another. The activity can be described as the operation of the system.
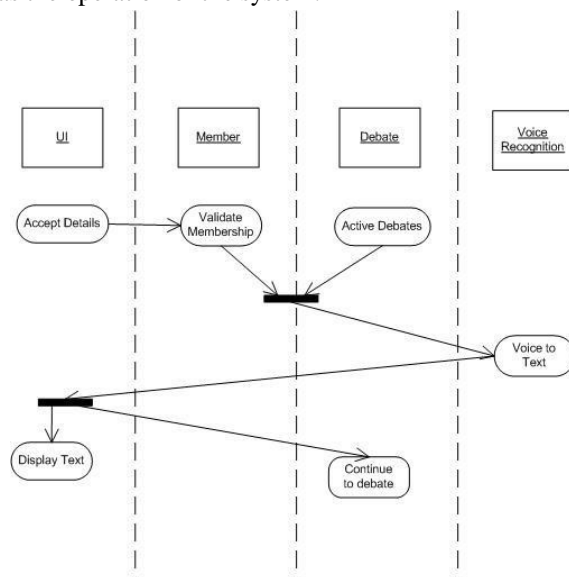
Figure 8- Activity diagram

X. RESULTS AND DISCUSSION

The following results were obtained from this project-
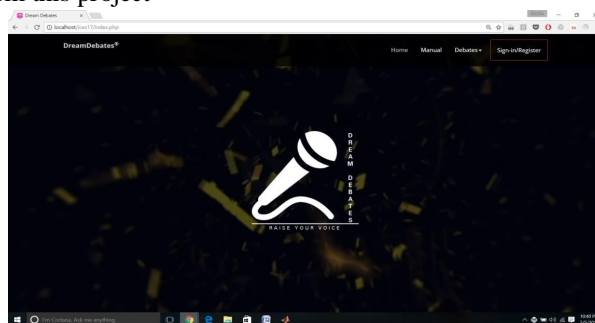
Figure 9-Home Page
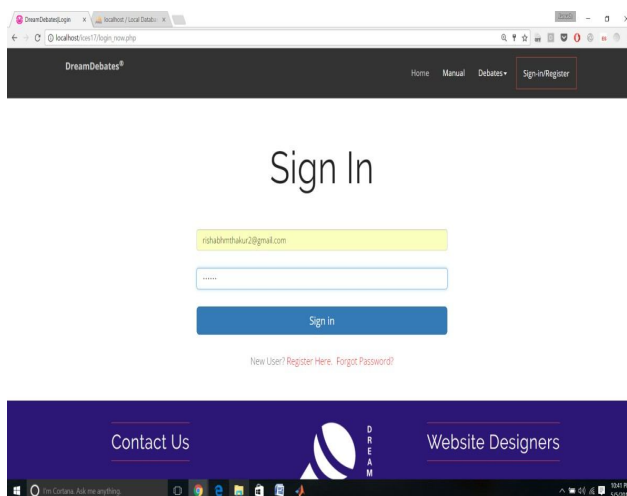
Figure 10-Login Page
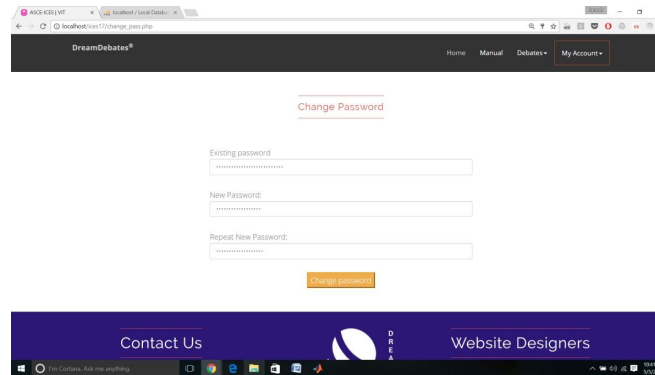
Figure 11-Successful Login
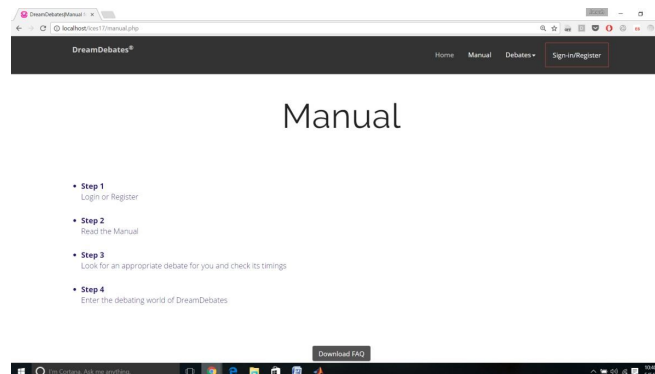
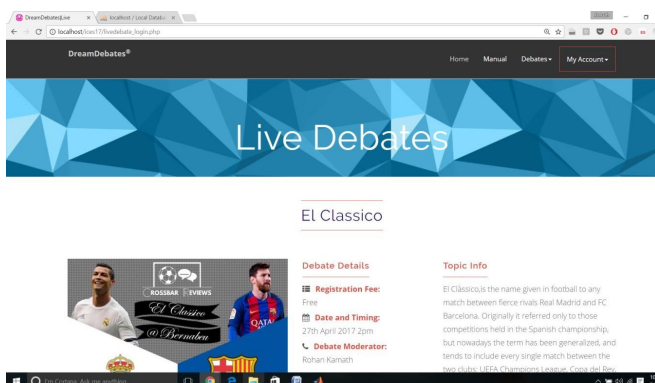

Figure 12-Procedure
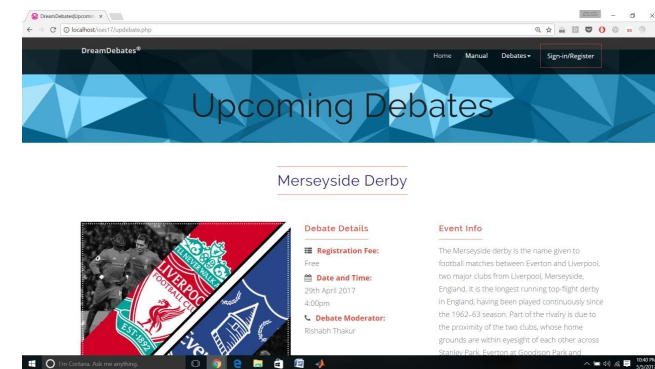
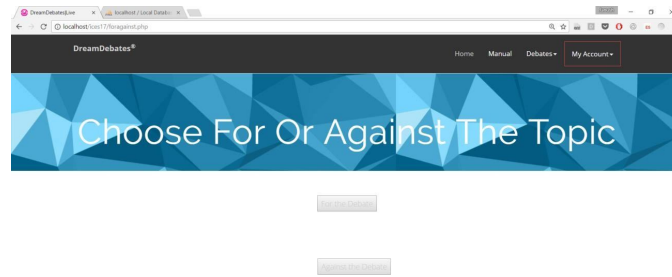Figure 13-Upcoming debates
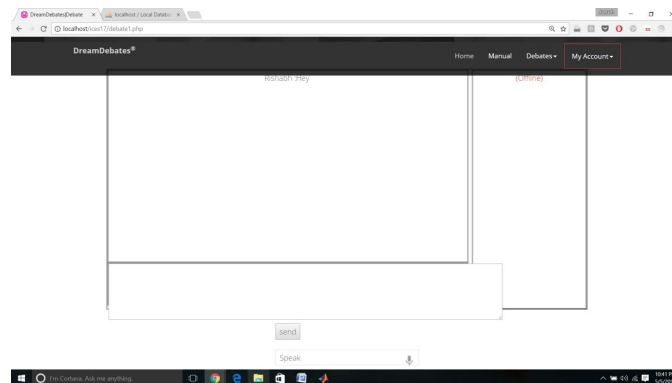

Figure 14-Live debates

Figure 15-Choosing side

Figure 16-Speech to text conversion

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