

ONLINE EXAMINATION SYSTEM FOR VISUALLY CHALLENGED

¹A. MUKUL CHOWDARY, ²A.RESHMA PRIYANKA, ³G.SRINIVAS, ⁴M.RAJESH, ⁵Dr.N.LEELAVATHY
^{1,2,3,4}UG Student, ⁵Professor, Department of Computer Science and Engineering,
Godavari Institute of Engineering & Technology, Rajahmundry, AP

ABSTRACT: Online Examination for visually challenged is a software solution, which allows a particular company or institute to arrange, conduct and manage examinations via online environment. This can be done through the Internet or Local Area Network Environment. Candidate can answer his/her examination paper on the computer and submit answers. The Examination Software evaluates the submitted answers and the results will be available immediately after completion of the examination. The online examination system provides the facility for the visually challenged students to interact with the system comfortably. Writing an online exam would be a big task for anybody if there is no proper Internet connection and when it comes to visually challenged students there would be a lot of issues for them to face while writing any exam. In order to avoid such issues and this project has come up with new features to facilitate the visually challenged with an ease. With the help of packages in python, the facility of text-to-speech and speech-to-text conversion is implemented to provide more functional support for visually challenged students. Also, by integrating with the keys of keyboard it was possible to enhance the functionalities provided. There are various systems which use Internet for utilizing packages / functions of speech-to-text for controlling the flow of the system. Without the Internet facility, the accuracy would be much less for such systems. In this project application, specific keys are used for maintaining the flow of the system. The systems which use speech-to-text for maintaining the flow of system, will require the student voice as input. When multiple visually challenged students are writing the exam at the same time, it would create a lot of noise, disturbance for the other students. With the help of this project such disturbances would be minimized to the utmost. By integrating the keys, this system can be able to traverse / navigate through the questions stack and submitting the answer can be done at ease, thereby maintaining simplicity and secrecy. With the help of specified keys, the visually challenged student can re-listen to the question, update the answers, if necessary and even re-check all the submitted answers before submission. The application has outperformed than the existing systems for visually challenged by facilitating simpler key usage for browsing through the question paper and submitting the answers.

1. INTRODUCTION

Internet has become one of the basic needs for day-to-day life. Every human being is widely accessing the knowledge and information through Internet. However, visually challenged people face difficulties in accessing these text materials, also in using any service provided through internet. The advancement in computer based accessible systems has opened up many avenues for the visually impaired across the globe in a wide way. Audio feedback based virtual environment like, the screen readers have helped blind people to access internet applications immensely.

The system is trying to introduce an exam system which would be helpful for the visually challenged people as it prompts out the various questions and then will receive the response as the answer with the help of keys which are integrated to the system such that not only it will be helping them to be more independent rather than relying on others help. As the title suggests, the application will be applicable for visually impaired persons using keys and Interactive voice response for login to the system. The system will prompt the user with voice commands to perform certain action and the user will respond to the same. The main benefit of this system is that the use of voice is eliminated to the utmost such that it won't require a high and continuous Internet connection, the user will have to respond through specified keys.

1.1 Objectives of Online Examination System for Visually Challenged

- To provide an interface through which student can appear for examination online for objective as well as subjective type questions
- To provide registration for students done by themselves
- To not provide facility of copy and paste while attempting the Subjective questions on the web page
- When the student starts the exam the timer will start automatically and show the student how much time is left
- The questions will be display randomly from question bank
- Objective answers will be checked automatically by the system from the database
- For subjective answer manually checking by exam department will take place
- To provided user name and password facility and credentials should be checked properly at the time of login for student, expert, controller and Exam Dept Admin
- To provide an interface from where controller will create new Expert and Admin for Exam Department
- The authority to modify the criteria is provided to the controller of examination
- To facilitate Experts to send a collection of questions in Question Bank
- The Exam Department will manage the question bank sent by experts
- To facilitate Exam Department Admin to make schedule and declare Result

1.2 PURPOSE OF THE SYSTEM

Within the scope of knowledge, visually challenged students face many troubles while attempting online examination system without any assistance. A visually challenged student cannot always easily find a person to attempt the online examination who is accepted by the respective organization. Also, there could be some disturbances between the visually challenged students and the assisting person during answering to the questions provided by organization. Issues like deviation between the expected answers of the visually challenged person and the attempted answers by the assisting person. To steer clear of mentioned issues which are present in existing online examination systems for visually challenged people, this project has been proposed

2. LITERATURE SURVEY

A review of completed and outgoing research has been conducted to identify current knowledge or methodologies that may be appropriate for predicting the pre requisites for the proposed system. The following would be describing those research papers.

- Sania khan, et al., have proposed a methodology that uses voice synthesis [1]. The online examination has been done through the voice acknowledgement and voice synthesis
- Shunmugasundari, et al., have proposed a methodology that uses voice recognition [2]. The voice recording framework has been utilized to record the voice as of now in certain configuration
- Akriti Vats, et al., introduced a VOT gadget [3] constrained by the human voice structure for the edification of visually challenged clients. Users are provided with the hardware equipment and the login used with the thumb impression
- Piotrkardy's, et al., have introduced a methodology [5] by which visually challenged people may call, send the text messages through mobile. This concept is based on the "phone book" and the additional options
- Gray, et al., have proposed a strategy [6] for improvement of an online, stage autonomous framework for college examination purposes that can be effectively gotten to and utilized by understudies with visual debilitations, with least exertion required to get familiar with its utilization. The developed examination system allows students with visual impairments to take suitably adapted online written examinations according to their individual and personalized special characteristics and preferences for reading digital text.

3. EXISTING SYSTEM

The system is a stand-alone application which uses Speech-To-Text (STT) and Text-To-Speech (TTS) technology to provide the users almost all of the capabilities of a conventional online examination. The online examination system is adaptable to different types of questions pertaining to different subjects, different time limits and different marking schemes, and can be customized according to the needs of any organization. All the data pertaining to the test is stored in a database which is linked to the application. The Voice Enabled Examination System is able to read aloud the questions and the different options available to the test taker. The candidate has to answer the question by pressing the option number. The system registers the answer given by the candidate and moves on to the next question when next question button or right arrow key is pressed. At the end of the test, a report is generated by the system.

3.1 Issues in Existing systems

- Time delay due to speech-to-text usage for taking answers
- Minimal accuracy
- Manual process need to be monitored
- Blind students cannot access independently, rely on others
- The noise suppression also arises for the lengthy word, entered by the student
- The voice entered is even in a smooth method there could some mismatch occur
- One of a kind language rather than English, they may not believe at ease with the aid of the blind folks

4. PROPOSED SYSTEM

This system would be operating with the help of internet services which is useful for Speech-To-Text conversions and for database connections. This system was being proposed with the sole purpose of reducing the pressure from upon the student while writing exam with the help of text to speech. Every portion of the system has been integrated with it and with the help of keys in keyboard, students can simply traverse through the system at ease with the specific keys like arrow, 1-4 numbered, escape, and enter keys in key board for various features, there by students having the utmost flexibility towards exam with the help of this system.

4.1 Advantages in this system

- Students or candidates who are visually challenged can go through the online exams with ease
- There is no need for scribes while examination
- Visually challenged students can do their work and go through the examination procedure independently by the help of this product
- The user can comfortably recheck all the attempted questions as well as un-attempted questions at the end of the examination before submitting the examination
- While the user attempting the examination, the user can also be able to hear the alert messages regarding time left
- This system facilitates the efficiency to the user by providing minimal usage of keys on the keyboard such that it reduces the mismatch errors, noise suppression problems and voice synthesis problems
- The user can answer the respective questions in the examination by using keys which are numbered as 1, 2, 3, and 4 on the keyboard. Therefore, mismatch errors which are caused by voice synthesis problems can be completely avoided

5. System Architecture

A system architecture or systems architecture is the conceptual model that architecture is the conceptual model that defines the structure, behaviour and more views of a system. An architecture description is a formal description and representation of a system in Fig. 5.1 architecture of this project has been described, organized in a way that supports reasoning about the structures and behaviours of the system. System architecture can comprise system components, the externally visible properties of those components, the relationships between them.

Login

The system asks the user to provide required credentials to login into the examination. The required credentials are user name and password of the corresponding student. The user would prompt the user name and password through a microphone to the system. This login process uses Speech-To-Text conversion which are already inbuilt in the python packages.

After providing the credentials of the user through a microphone, the system checks whether the username and password which are provided are correct or not. In this phase it checks for four conditions

- If the username which is provided is correct, but the password which is provided by the user is incorrect, then the system will prompt the user through voice command as “password is incorrect, login failed”.
- If the username which is provided is incorrect, then the system doesn't check about the password whether it is correct or not, it simply prompts the user through voice command as “username is incorrect, login failed”. If both the username and password which are provided are incorrect, then the system will prompt the user “username is incorrect, login failed”.
- If both the username and password which are provided are correct, then the system will prompt the user “login success”.

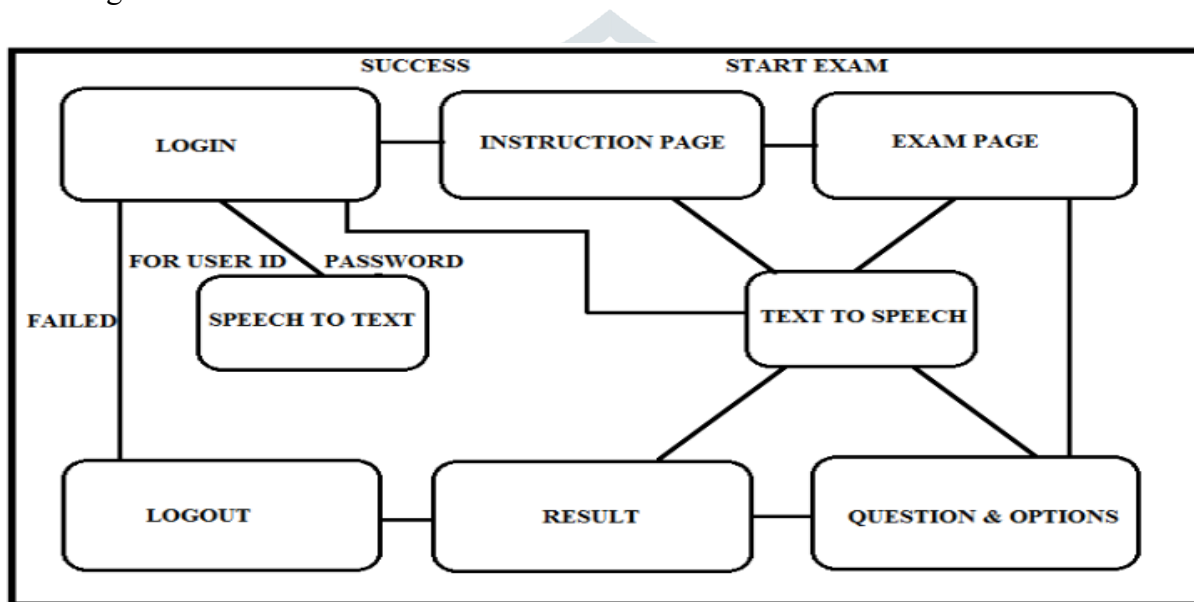


Figure 5.1 System Architecture

Instruction Page

After successful login, instruction page will be displayed on the desktop screen which contains all the set of instructions that are going to be applied while attempting the examination. The system will prompt each and every detail about the instructions mentioned in the instruction page to the user. Such that the user can be able to attempt the examination without any confusion.

Exam Page

After completion of prompting instructions which are mentioned in the instruction page, the control flow of the system is directed to the exam page of the user. This system facilitates a feature that, only one question is displayed at a time. The user can navigate to the previous and the next questions by navigating through the keys on the keyboard which are integrated with the code of the system.

The system will prompt the question which is displayed on the screen to the user. The question can be able to hear by the user through a microphone which is plugged into the system. This process will be done by using text to speech conversion which is inbuilt in python packages. The user can be able to hear the prompted question as many times as they want by navigating through the key which is integrated on the keyboard. The user can be able to hear the options and their description of the corresponding question by navigating through the integrated key on the keyboard. This system typically includes multiple choice questions, the user can answer the questions by using the integrated keys which are numbered 1,2,3 and 4 on the keyboard.

Questions and Options

The user can change the selection of options as many times as they want. The answer of a corresponding question will be saved in a corresponding array.

Result

The Result will be calculated by comparing the original answer and the answer in the array. The result of the user will be generated and displayed on the screen.

Logout

After the submission of exam and the generation of result, the user account will automatically log out of the examination portal.

6. RESULTS

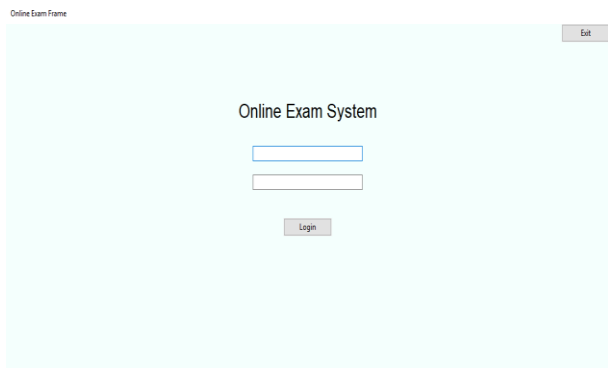


Figure 6.1.a Login Frame

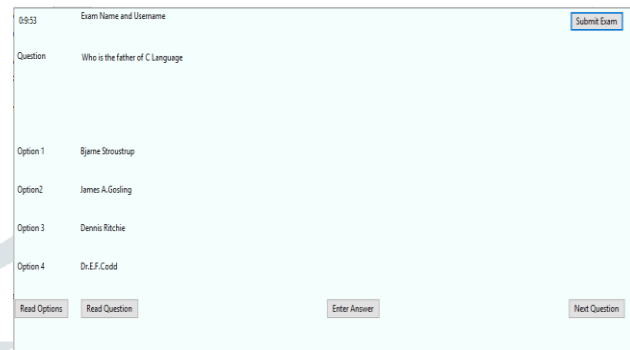


Figure 6.1.b Exam Frame

As shown in the fig 6.1.a login frame contains user name and password field which works with the help of speech to text, fig 6.1.b describes about the exam frame and how the questions are arranged.

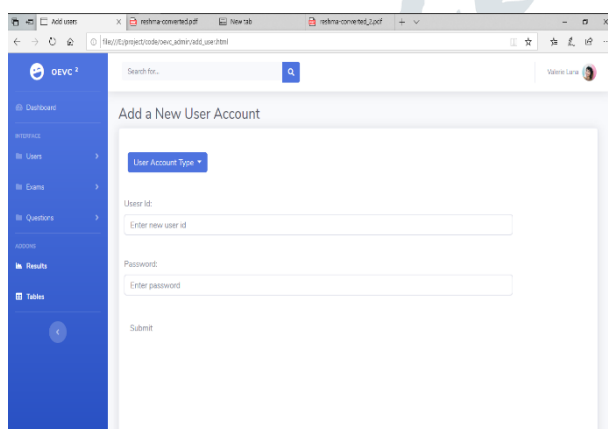


Figure 6.2.a Add new user account

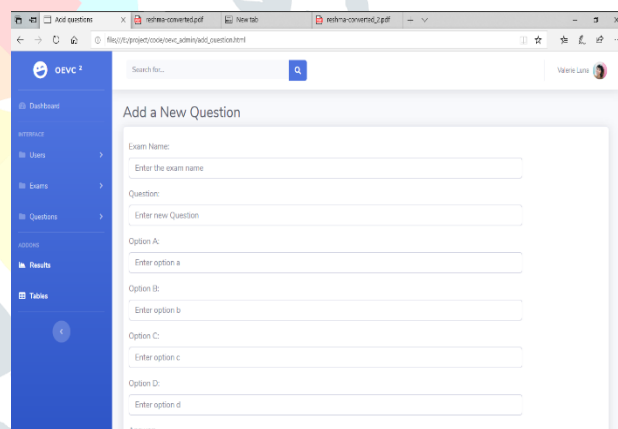


Figure 6.2.b Add new Question

In fig 6.2.a there a feature to add the user account for a student or a professor and in fig 6.2.b description regarding addition of a new question to an existing exam and options for that question.

7. CONCLUSION

This project is a useful application for every visually challenged student to admire their talent easily through online exams like other students. Visually challenged people could give an extra dedication to test their internal abilities by using web examination. The user interface for individuals is on the system keyboard. Thus, visually challenged people can easily give exam like a common man without much difficulty.

This project facilitates a visually challenged person to attempt an online examination without any human assistance. This project mainly focuses on the complete avoidance of voice synthesis, voice recognition & noise suppression problems and also deals with mismatch errors issues. This project aims to deliver a portal which provides minimal usage of the keyboard such that it reduces ambiguity which is caused while prompting through a microphone

It enables a visually challenged person to attempt the examination without any disturbance caused due to surroundings. The user can easily navigate through the keys on the keyboard which are integrated with the code of the project. The usage of minimal keys on the keyboard can reduce the ambiguity to the utmost. The user is able to hear the alert messages regarding the time left for submission of the examination. The user can hear the questions as well as option as many times as needed by clicking the keys on the keyboard which are included in the code. The user can easily navigate to the previous question as well as next question through the keys on the keyboard. This project enables the user to recheck all the attempted questions and also un-attempted questions before the submission of the examination. Therefore, as this project includes all these facilities, it can be opted by a visually challenged person to attempt an online examination to test the personal abilities.

This project aims to provide complete usability, supportability, portability and feasibility for the user to easily attempt an online examination as a normal individual. By using this application, a visually challenged person is able to participate in any competitive examinations conducted by organizations through online facility. Therefore, this may increase the participation percentage of the visually challenged people in any competitive examinations.

8. FUTURE SCOPE

This project proposes a method and a good way to create a revolution in a global of education via providing a simpler way for visually challenged people to take tests simply as typical scholars do.

Future work can be extended to propose efficient Speech-To-Text converters which can operated with in offline based packages. If offline Speech-To-Converters are used, then system can be operated without the facility of Internet. So that the examination which is conducted by this system can be purely offline and none can do to obtain any miscellaneous sources through Internet. By adding this feature, plagiarism while writing the examination can be eliminated for accurate result of the user.

Scope can be extended, by adding a feature which enables the user to choose between different sections in the examination. Such that visually challenged people can attempt different sections within the interest. In future, technological advancement can be done by implementing machine learning to add a feature which would provide a facility that the user can choose a specific section from different sections which are having equivalent score summation. Scope of this project can be extended, by adding a feature that facilitates finger print sensor for user login purpose. Login to the examination can be done at ease and moreover, malpractices can be reduced to utmost thereby security can be enhanced.

By functional addition of above mentioned features, this project can be more likely used by the visually challenged people to attempt the online examination. By the use of this project, specific organizations can take visually challenged people into consideration of a job by conducting same online examination for normal as well as visually challenged people.

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