Project Synopsis
on

Quizi for Malvoyant

Submitted as a part of course curriculum for

Bachelor of Technology
in
Computer Science

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2021-2022

DECLARATION

We hereby declare that this submission is our work and that, to the best of our knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgement has been made in the text.

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CERTIFICATE

This is to certify that Project Report entitled "**Quizi for Malvoyant**" which is submitted by **Alankrita Singh, Priyanshi Sharma, and Ritu Yadav** in partial fulfilment of the requirement for the award of degree B. Tech. in Department of Computer Science of Dr A.P.J. Abdul Kalam Technical University, Lucknow is a record of the candidates own work carried out by them under my supervision. The matter embodied in this report is original and has not been submitted for the award of any other degree.

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Supervisor
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Prof. Vikas Kamra

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Last but not the least, we acknowledge our friends for their contribution to the completion of the project.

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ABSTRACT

Online assessment of students is also a new challenge to the old education system. It's even more difficult to track the daily progress made by every student in the batch in Online learning. *Quizi for Malvoyant* is a website that not only provides solutions to the above issue but also provides a platform that can be used by visually impaired students. The increasing use of online modes for education and lack of proper monitoring of the progress made by students is a big threat to the education system of the nation. Moreover, the online mode cannot be accessed by visually impaired students which is also a gap in the online mode of learning. Quizi for Malvoyant is a web application for all kinds of users. Users can simply log in to be able to create and join quizzes via sharing the quiz code. For blind students, there will be some speech commands that can be followed for smooth conduction of online quiz. This system will help lecturers save their time because of automated marking. Lecturers can set up a quiz which is it will auto-grade itself. Students can answer the quiz from any location and get fast result

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CHAPTER 1

1.1 INTRODUCTION

It is a well-known fact that digital India is the outcome of many Innovations and technological advancements. Covid-19 has given a boom to the usage of more online mode methods in teaching. Online learning is now considered the future of education and is more cost-effective than traditional education. Quizi for Malvoyant refers to a service to conduct online quizzes or test. It will evaluate student's progress evaluation using modern computer technology. It replaces the paperwork and overcome the outcomes of traditional way of examinations using paper or pen. It is a web-based platform that can be used by teacher or student at any remote location. Quizi for Malvoyant is fully developed automated system to efficiently evaluate the candidate's progress that not only save the time of ExaminationController but also gives fast result. Teacher has authority to propose tests or papers. It is cost effective and time effective. Candidate can login through their computers or mobile phones using the unique code provided to them for a particular test and then they can take the exam. Questions can appear in any mode MCQ (Multiple Choice Questions) or subjective. The feature that makes Quizi for Malvoyant different from other quiz websites is that it is accessible by visually impaired students as well. There will be some speech commands provided that can be followed by students to successfully complete their quizzes. This will prove to be a big step in filling the gap that visually impaired students face in the system of online learning.

1.2 PROBLEM STATEMENT

The idea of creating this website was conceived after relative observations of the real-life incidents that are happening in and around the globe. Online learning is now considered the future of education and is morecost-effective than traditional education. The increasing use of online modes for education and lack of proper monitoring of the progress made by students is a big threatto the education system of the nation. Manual assessment is prone to errors and is not time efficient. So why not automate the whole assessment process? Why would a teacher spendhis/her precious time physically correcting the answer of their students? So our main objective is to create a method that would allow us to make our computers do the whole assessment work and award score to the answers accordingly. Moreover, the online modecannot be accessed by visually impaired students which is also a gap in the online mode of learning. So, we have come up with an online quiz system that is fast and can be used byvisually impaired students as well.

1.3 OBJECTIVES

A list of students and their marks in respective quizzes will be shared with the creator/ teacher of the quiz. Following listed below are the main functions of proposed system:

- The teacher will be able to create quizzes, control access to quizzes, copy and share the quiz – code and view/ delete the responses.

- The student will be able to attempt a quiz by using the quiz code, voice recognition and will be able to see their scores in the attempted quizzes.

- The Blind Quiz Module works with the limited Speech Commands to interact with App.

CHAPTER 2
LITERATURE REVIEW

Decreasing the Barrier to Entry for an Open-Source Full-Stack Web Development [1]

The purpose of this paper is to propose how to decrease the barrier to entry for open-source projects and full-stack web development. For this purpose, we conduct documentation and architectural modeling to lessen the steep learning curve for open source and full-stack web development. The research will bringing ten hands-on practices (HOPs) to teach students to build a full-stack web application. The learning curve from open-source full-stack web development is decreased with the help of high-level overview diagrams. The author's documentation is 13% more effective than the official documentation to decrease the learning curve

Face Recognition in Unconstrained Environment with CNN [2]

Face recognition is a well-studied problem in computer vision. Automatic face recognition is an important vision task in several practical applications such as identity verification, intelligent visual surveillance, and immigration automated clearance systems. In real-world applications, natural data can still exist in a variety of conditions such as noisy information. One of the key ideas has been to use the adaptive fusing strategy of SoftMax loss and Centre loss, which is helpful to improve performance and to make the model more efficient and flexible.

Automatic Speech Recognition – A Brief History of The Technology Development [3]

Designing a machine that mimics human behavior, particularly the capability of speaking naturally and responding properly to spoken language, has intrigued engineers and scientists for centuries. automatic speech recognition systems today find widespread application in tasks that require a human-machine interface, such as automatic call processing in the telephone network and query-based information systems that do things like provide updated travel information, stock price quotations, weather reports, etc. After nearly five decades of research, speech recognition technologies have finally entered the marketplace, benefiting the users in a variety of ways. Throughout the course of the development of such systems, knowledge of speech production and perception was

usedin establishing the technological foundation for the resulting speech recognizers.

Accurate And Robust Face Recognition from Rgb-D Images with A Deep Learning Approach [4]

A color face image represents photometrical sensing of a face under illumination conditions, which is sensitive to not only head pose and facial expression, but also surface texture and light sources. With deep learning and transfer learning, the classification based on each of them works well independently. Color and depth images provide complementary information for face recognition.

Comparative Analysis of Mean Stack and Mern Stack [5]

Most of today's world web applications are designed using a 'stack' of various technologies. MEAN stack and MERN stack are two of the most popular and extremely powerful stacks that are used for the development of modern web applications. MERN stands for MongoDB, ExpressJS, ReactJS, and NodeJS and MEAN being for MongoDB, ExpressJS, AngularJS, and NodeJS. MEAN is a combination of Open-Source components that all-together, provide an end-to-end framework for developing dynamic web applications, starting from the top (code running in the browser) to the bottom (i.e., database).

Unsupervised Cross-Lingual Representation Learning for Speech Recognition [6]

Unsupervised cross-lingual speech representations learned from the raw waveform. Pretraining on data in multiple languages improves both over monolingual pretraining as well as prior work, with the largest improvements on low-resource languages. Fine-tuning the model on multiple languages at once enables a single multilingual speech recognition model competitive to individually fine-tuned models. Analysis of the discrete latent speech representations reveals that the model shares capacity across languages and particularly so with related languages. It is found that words in a person's memory unit are stored in segments as a basic unit and are distinguished from each other by a series of feature sets, which are called distinguishing features.

Design And Implementation of Mern Stack-Based Real-Time Digital Signage System [7]

Most conventional DSS's (Digital Signage Systems) have been built based on the LAMP framework. Recent research has shown that the MEAN or MERN stack framework is simpler, more flexible, faster, and more suitable for web-based application than the LAMP stack framework. In this paper, we proposed a MEARN stack-based real-time digital signage system (MR-DSS) which supports real-time operation for system management and monitoring, fast content update, instant messaging, as well as non-real-time CMS services via REST APIs. In addition to an explanation of component architecture, some design and implementation issues were clarified.

Face Recognition Based on Principal Component Analysis [8]

Face Recognition has been used in various applications where personal identification is required, for example in the Visual Attendance system where student identification and recognition are achieved through face recognition, in gaming applications, in security applications, in short, face recognition applications are used in widely in many corporate and educational institutions. The algorithm delivers quite good results but there is room to improve the algorithm performance in case of a huge audience and in the case of faces captured in the scene at some angle, so the proposed system can be extended in the future to cover this aspect.

Modern Web Applications Using Reactjs [9]

ReactJS is JavaScript library which is deployed to develop reusable user interface (UI) components. React implements unidirectional data flow thus simplifying the boilerplate and hence proves to be much easier than traditional data binding. Despite of a few minor disadvantages that that ReactJS has, it is a sure shot game changer.The client scripts now make sure that only necessary and essential data is pushed, and a seamless and pleasing experience is maintained across the entire web. ReactJS has intensepower and features to meet requirements of today's trends.

Full Stack Web Development Teaching: Current Status and A New Proposal [10]

The main purpose of this effort is to present a brand-new environment for practicing some of the most broadly used – both client- and server-side – web technologies. It is about a web-based, access-free, educational platform, which provides a user-friendly interface, illustrative graphics and supporting material, as well. Full-stack development platforms are rarely met online, as most of them are usually oriented towards either front or back-end development and focus on specific programming languages without offering an overview of actual, integrated projects. As mentioned above, the environments compared in the analysis compose a representative sample of the most popular online educational platforms. The research has been conducted under limitations, which include online presence, free access, and availability of the examined web technologies (HTML, CSS, JS, PHP, MySQL).

MERN Stack Web Development [11]

We use React JS for MERN frontend. Because part of the front-end app is straightforward and does not have a functionality that is different enough for a single frame to be allowed to run, the selection is greatly reduced to personal preference. React.js has some advantages compared to other previous frameworks, such as a faster learning curve, support, and future development programs from the organization (Facebook), and strong documentation that has made it an easy-to read and useful service framework. For backend we use Node JS and Express JS. We use Mongo DB database. MongoDB stores data in flexible scripts, such as JSON. Ideal for web applications with many pre-built connections.

CHAPTER 3
PROPOSED ALGORITHM

1. Capture the student's image through camera.
2. Detect each individual face by apply face detection algorithm.
3. Extract the ROI (Region of Interest) in rectangular bounding box.
4. Converting to gray scale, apply histogram equalization and resize to100x
100 i.e., apply pre-processing.
5. If image captured, then store in database Else Apply LBPH (for featureextraction) Apply SVM (for classification)
6. End if post-processing

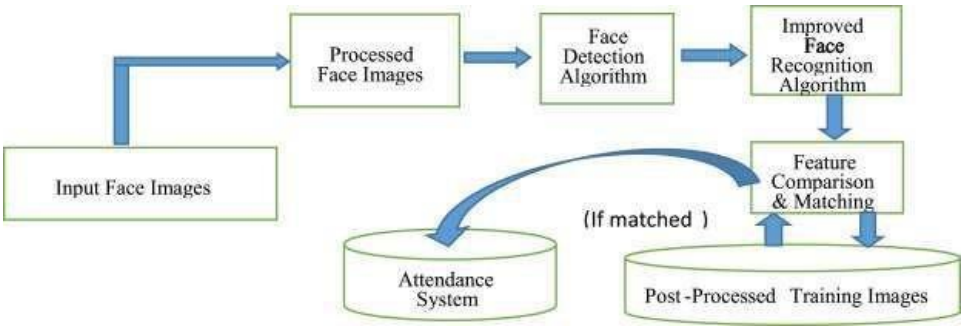

Fig1: -Flowchart for Proposed Algorithm

METHODOLOGY

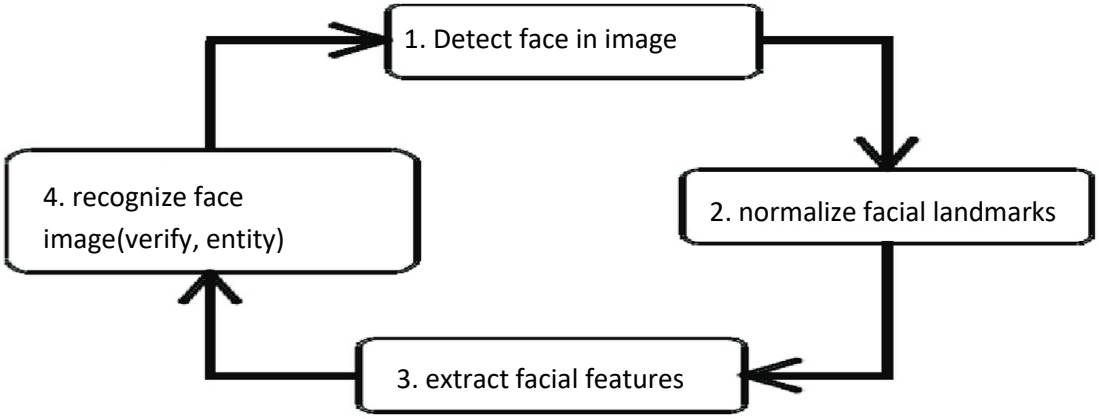

Fig2: -Flowchart for face detection

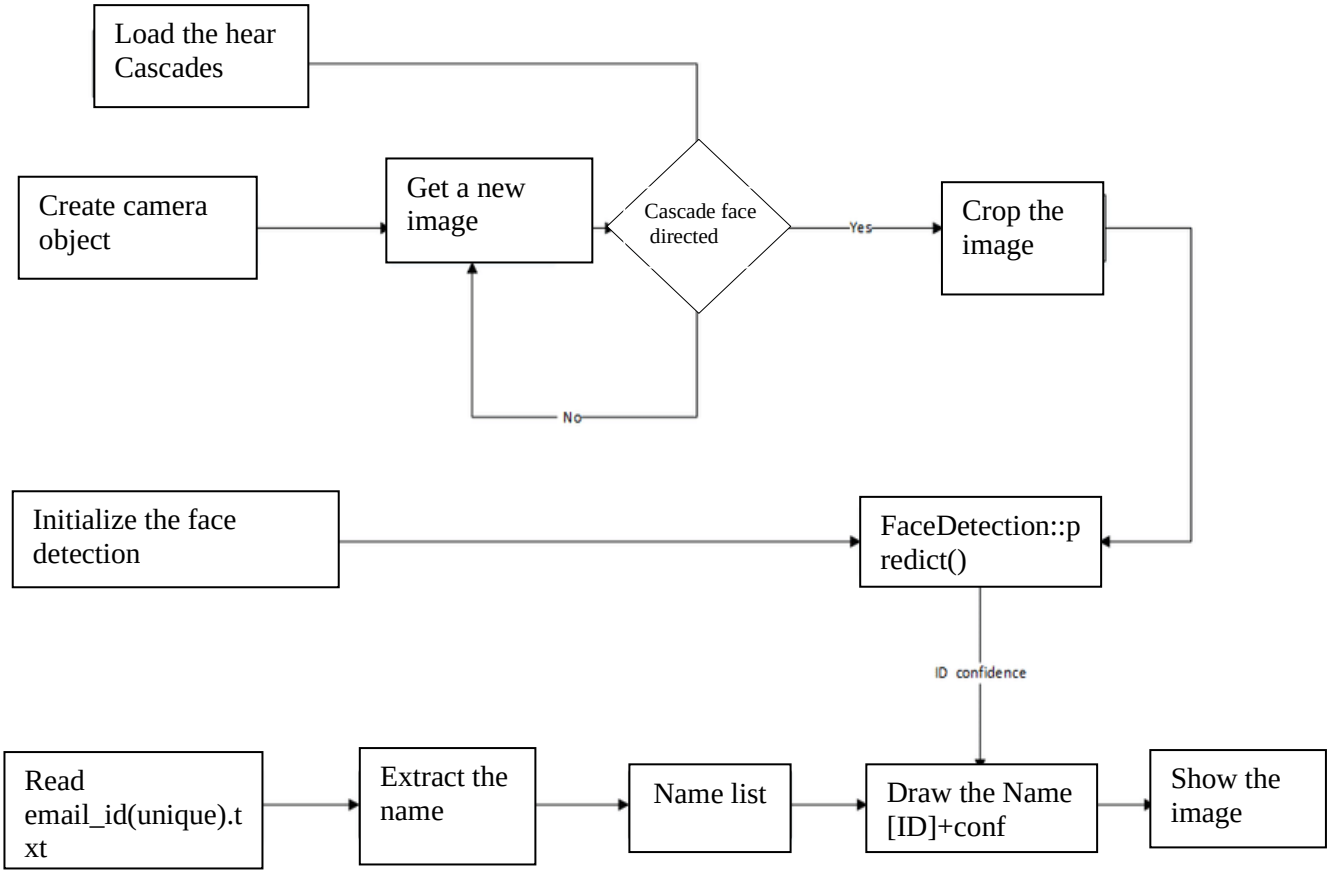

Fig3: - Flowchart for face verification

CHAPTER 4

TECHNOLOGY USED

Front-end

- HTML- HTML is the standard markup language for Web pages. With HTML you can create your own website.

- CSS- Cascading Style Sheets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable.

- JAVASCRIPT- JavaScript is a light-weight object-oriented programming language which is used by several websites for scripting the webpages. It is an interpreted, full-fledged programming language that enables dynamic interactivity on website.

- React js- React is an open source, JavaScript library for developing user interface (UI) in web application. React is developed and released by Facebook.

- Bootstrap- Bootstrap is a free and open-source CSS framework directed at responsive, mobile-first front-end web development.

Back-end

- Node js- Node.js uses asynchronous programming. A common task for a web server can be to open a file on the server and return the content to the client.

- Express js- small framework that works on top of Node.js web server functionality to simplify its APIs and add helpful new features.

CHAPTER 5
DIAGRAMS

Fig.4- LOGIN FOR WEBSITE

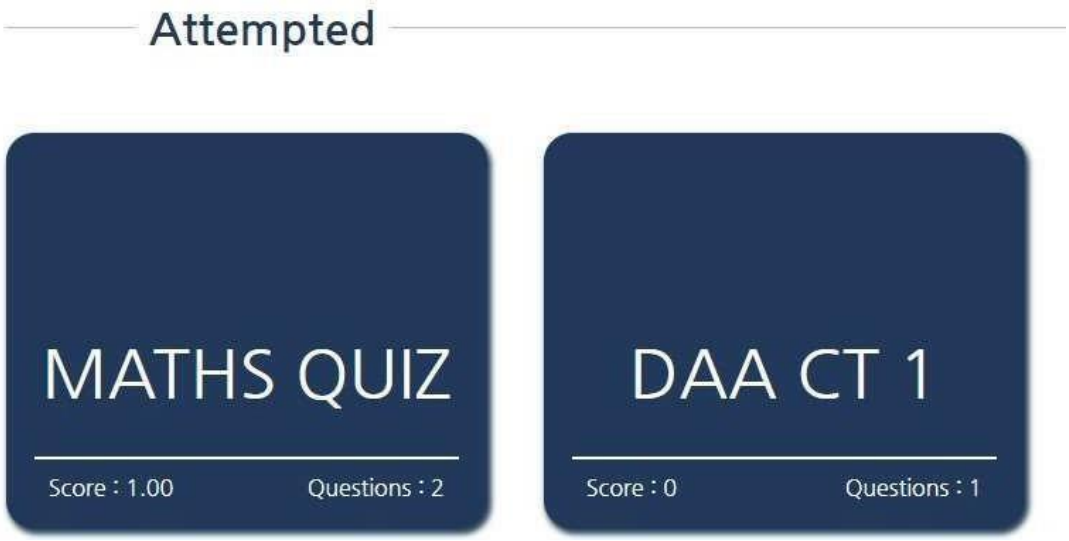

Fig.5- ATTEMPTED QUIZZES

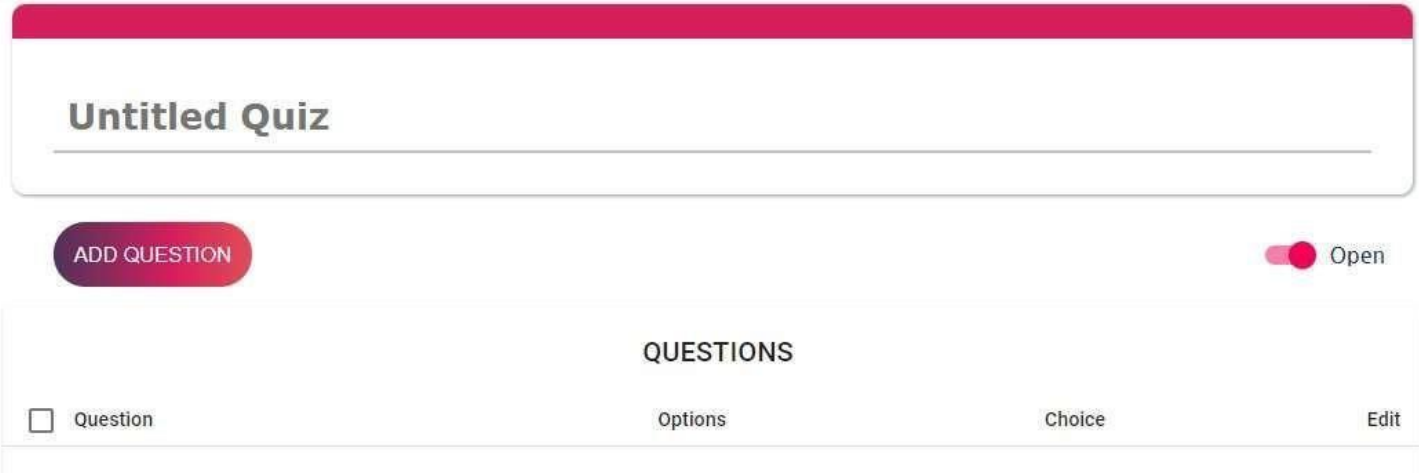

Fig.6- CREATING A QUIZ

Fig.7- CREATED QUIZZES

CHAPTER 6
EXPECTED OUTCOME

- The development of “QUIZI FOR MALVOYANT” for taking quizzes, test and assignments using React JS and Mongo DB accords benefits to the end users.
- Accessing the daily progress will no more be a problem as our website has taken care of that as well.
- The website is helpful for physically challenged people.
- Deployed website “QUIZI FOR MALVOYANT” will be a great help for all kinds of students and teachers worldwide.
- Research paper to publish on International Conference CONFLUENCE-2023.

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