Department of Computer Science

University of Gujrat

VOICE-BASED BLOGGING WEBSITE FOR BLIND PEOPLE

Submitted By:

Student Name **Amina Fayyaz**

Student Name **20011519-057**

Supervised By:

Supervisor's Name: **Mr. Muhammad Abrar**

DECLARATION

I certify that project title **AI powered website for blind people** is under my supervision with students of BS-CS, Faculty of Computing & Information Technology, University of Gujrat, Pakistan, worked under my supervision.

MR. MUHAMMAD ABRAR
Supervisor's Name
Department of Computer Science
Faculty of Computing & Information Technology
University of Gujrat, Punjab, Pakistan.
Email: Muhammad.abrar@uog.edu.pk

Dated: 8th November, 2023

FINAL YEAR PROJECT PROPOSAL

Abstract

It is a blogging website for blind and visually impaired persons. This website contains AI integration with the website. NLP natural language processing will be used with libraries like styypsx3 and speech_recognition along with pyAudio implemented in python or ubuntu desktop for less memory usage. Virtual memory can provide assistance when working with a large memory usage project. Python and Anaconda navigator is basically used for Machine Learning, Deep Learning and Artificial intelligence program and algorithms. Moreover, for the purpose of website designing Javascript, CSS and HTML will be used with sublime text tool or Visual Studio code.

1. Introduction

This website will start from login user will click on anywhere to enable speaking tool it will read the screen for them. User can enter their emails and passwords when the computer speaks special word “SPEAK”. User will speak in their emails and passwords and it will reconfirm from them. After login successfully, second page of the website will be shown. Screen will be read and they can start writing their blogs, comments or articles and upload it on the internet. Schedule, Development Process, Techniques, Tools, Platform with reasoning.

2. Project Title:

Voice-Based blogging website for blind people.

3. Project Overview statement:

The project "Voice-based blogging website for blind people" aims to create a platform that enables visually impaired individuals to share their thoughts and experiences through spoken content. This website will leverage voice recognition technology to convert spoken words into written text, facilitating blogging and communication for the blind community. By enhancing accessibility and inclusivity, this project seeks to empower visually impaired individuals to express themselves, connect with others, and participate in the blogging community.

4. Targeted Audience:

Target audience will be the person with disability especially blind people and visually impaired persons. Blind people can use this AI-powered website to communicate with the outside world. They can use their creative abilities to deliver their thoughts with the world.

5. Project Goals & Objectives:

The goals and objectives of the project "Voice-based blogging website for blind people" are as follows:

1. Develop a user-friendly and accessible website interface that accommodates the needs of visually impaired individuals.
2. Implement voice recognition technology to accurately convert spoken words into written text.
3. Enable visually impaired users to create and publish blog posts through voice input and editing options.
4. Provide a seamless browsing experience for blind individuals to navigate and explore blogs and articles.
5. Incorporate social features to foster community interaction and engagement among visually impaired users.
6. Enhance the website's accessibility by implementing screen reader compatibility and adherence to web accessibility standards.
7. Conduct rigorous testing and user feedback sessions to ensure the effectiveness and usability of the website.

By achieving these goals and objectives, the project aims to create a valuable platform that empowers blind individuals to express themselves through blogging, connect with others, and break down barriers to information and communication.

6. Application Architecture:

The application architecture for the "Voice-based blogging website for blind people" project will involve several components and technologies working together to achieve the desired functionality. Here is a high-level overview of the application architecture:

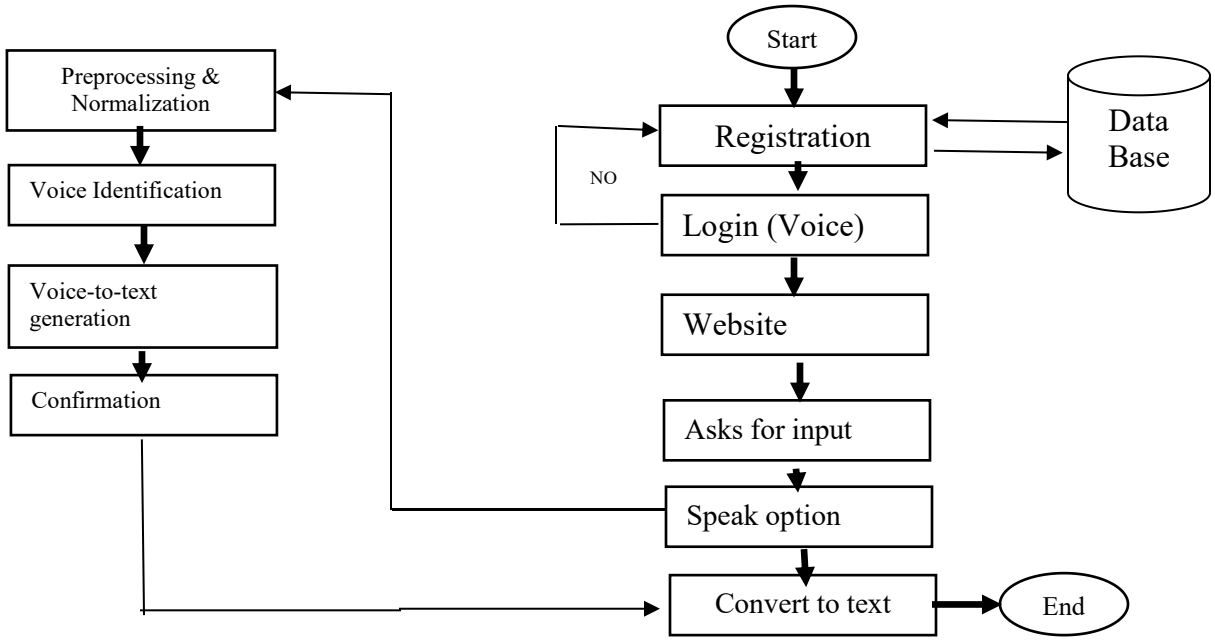
- Front-end Interface: The front-end interface will be designed to be user-friendly and accessible for visually impaired users. It will incorporate a clean and intuitive design, optimized for screen readers and other assistive technologies. The interface will provide options for voice input, navigation, and editing of blog posts.

- Voice Recognition Module: The voice recognition module will leverage speech-to-text technology to convert spoken words into written text. This module will be responsible for accurately transcribing the user's voice input, which will serve as the basis for creating blog posts.

- Content Management System (CMS): The CMS will provide the necessary infrastructure for creating, storing, and managing blog content. It will enable users to create new blog posts, edit existing ones, and organize their published content.

The CMS will also handle user authentication and authorization to ensure secure access to the website's features.

- Database: The database will store all the textual content, user information, and metadata associated with the blog posts. It will maintain a structured representation of the published blog content for efficient retrieval and management.



7. Modules:

The modules of the project are following:

1. User Authentication: Allow users to create accounts and log in securely.
2. Voice Recognition: Implement a robust voice recognition system to convert spoken words into text.
3. Text-to-Speech (TTS) Conversion: Incorporate TTS technology to convert written content into spoken words for users.
4. Blog Management: Create, edit, and delete blog posts using voice commands.
5. Audio Editing: Allow users to edit their audio content, insert pauses, correct mistakes, etc.
6. Navigation: Implement voice-controlled navigation to help users move through different sections of the website.
7. Accessibility Features: Ensure the website is compatible with screen readers and follows accessibility best practices.
8. Responsive Design: Ensure the website is responsive and works well on different devices and screen sizes.

9. Security Measures: Implement security features to protect user data and ensure the safety of the platform.

8. Hardware and Software Specification:

Hardware Specifications:

1. Server Infrastructure: A robust and scalable server infrastructure will be required to host and manage the website. This may include dedicated servers or cloud-based solutions depending on the expected traffic and scalability needs.

2. Storage: Sufficient storage capacity will be needed to store user-generated content, including blog posts, media files, and associated metadata. The storage solution can be based on hard drives, solid-state drives (SSDs), or cloud storage services.

3. Computing Resources: Sufficient computing power will be necessary to handle the voice recognition processing, content management system operations, and other computational tasks. This can be achieved through servers with adequate processing capabilities, including CPUs and RAM.

4. Accessible Devices: Blind users may utilize assistive technologies such as screen readers and braille displays to access the website. The hardware specification should be compatible with these devices and should meet the accessibility standards.

Software Specifications:

1. Operating System: The choice of the operating system will depend on the specific requirements of the project and the underlying server infrastructure. Common options include Linux distributions (e.g., Ubuntu, CentOS) for server environments.

2. Web Development Framework: A suitable web development framework will be used to build the front-end interface and back-end functionalities of the website. This could include frameworks like Django, Ruby on Rails, or Node.js, depending on the development team's expertise and preferences.

3. Voice Recognition Technology: The software will incorporate speech-to-text technology for accurate transcription of spoken words. Popular voice recognition solutions include Google Cloud Speech-to-Text, Microsoft Azure Speech Services, or open-source solutions like Mozilla DeepSpeech.

4. Content Management System (CMS): A CMS will be implemented to manage blog content and user interactions. Examples of CMS platforms include WordPress, Drupal, or custom-built CMS solutions tailored to the project requirements.

5. Database Management: A relational database management system (RDBMS) such as MySQL, PostgreSQL, or MariaDB will be utilized to store and manage structured data, including user information, blog posts, and metadata.

6. Accessibility Tools: The website will incorporate accessibility tools, such as screen reader compatibility and keyboard navigation support. These tools may rely on specific software libraries or frameworks tailored for accessibility.

7. Development Tools: Various development tools and programming languages will be utilized throughout the project lifecycle, including code editors (e.g., Visual Studio Code, Sublime Text), version control systems (e.g., Git), and issue tracking tools (e.g., JIRA, GitHub).

9. Components:

The components of the project are divided into breakdown structure of web pages:

1. **Landing Page:**
    - **i.** Login/Registration Module: User authentication and registration form.
    - **ii.** Accessibility Information: Brief explanation of how the voice-enabled features work and the accessibility options available.
    - **iii.** Navigation Menu: Voice-controlled navigation options for different sections.
    - **iv.** Featured Blogs: Highlights of popular or recent blog posts.
    - **v.** Multilingual Support Selector: Option for users to choose their preferred language.
2. **User Dashboard:**
    - **i.** User Profile: Editable user profile information.
    - **ii.** Voice Recognition Settings: Customization options for voice recognition sensitivity and language preferences.
    - **iii.** Create New Blog Post: Voice-enabled form for creating a new blog post.
    - **iv.** Manage Existing Blog Posts: List of user's published blog posts with options to edit or delete.
    - **v.** Notifications: Alerts for new comments, likes, or other interactions.
    - **vi.** Accessibility Settings: Options for adjusting screen reader compatibility and other accessibility features.
3. **Blog Viewing Page:**
    - **i.** Blog Content: Display of the blog post content.
    - **ii.** Voice Commands for Navigation: Instructions for navigating through the blog using voice commands.
    - **iii.** Comments Section: Voice-enabled comment submission and display.
    - **iv.** Like/Share Buttons: Options for users to express appreciation and share the blog post.
    - **v.** Related Blogs: Suggestions for other blog posts based on the current content.
4. **Community Selection Page:**

i. List of Communities: Display a list of available communities or categories that users can choose from.
ii. Voice-Enabled Community Selection: Allow users to choose a community or category using voice commands.
iii. Community Descriptions: Provide brief descriptions or tags for each community to help users make informed selections.
iv. Join/Create Community: Options for users to join existing communities or create new ones.
v. Continue Button: A button to proceed to the search page after selecting a community.

5. **Logout Page:**
   User can logout from his/her account and will be directed to the first page

10. Estimated Cost:

The cost breakdown is as follows:

- Buy new laptop in order to complete this project cost 50k.
- Bought 500GB External SSD along with extendable 4GB RAM.

COCOMO MODEL:

i. Project Size (KLOC - Kilo Lines of Code): Assume 50,000 lines of code.

ii. Effort Adjustment Factor (EAF): Assume EAF is 1.2.

iii. Basic COCOMO Formula: $= 2.4 \times (50)^{1.05} \times 1.2$

iv. Effort=$2.4\times(50)\ 1.05 \times 1.2$

v. Basic COCOMO Parameters: Assume a=2.4 and b=1.05.

vi. Calculate Effort: $= 2.4 \times (50)^{1.05} \times 1.2$

vii. Effort=$2.4\times(50)^{1.05} \times 1.2$

viii. Calculate Development Time: $= 2.5 \times(\text{Effort})^{0.38}$

ix. Calculate Personnel Required: = Personnel= Time / Effort

x. Calculate Cost: . **Cost= Personnel×Time×Monthly Cost**

11. Tools and technologies used with reasoning:

The development of a voice-based blogging website for blind people may involve various tools and technologies. Here are some commonly used ones with their reasoning:

1. Web Development Framework: Choosing a web development framework is crucial for building the website's front-end and back-end components. Options

like Django (Python) or Ruby on Rails provide efficient development workflows, rich ecosystem, and extensive community support.

2. Relational Database Management System (RDBMS): RDBMS such as MySQL, PostgreSQL, or MariaDB facilitate structured data storage and retrieval. They provide robust data management capabilities, ensuring efficient storage and retrieval of blog posts, user profiles, and metadata.

3. Accessibility Tools and Libraries: Incorporating accessibility tools and libraries such as ARIA (Accessible Rich Internet Applications), screen reader compatibility, and keyboard navigation support empower visually impaired users to navigate and interact effectively with the website. Frameworks like React.js or Vue.js often have built-in accessibility features or can be augmented with accessibility libraries for improved user experience.

12. Project milestones and deliverables

Project Milestones:

- Research and analysis of existing voice-based blogging platforms and their accessibility features for blind users.
- Designing the user interface and user experience for the website, including the layout, navigation, and accessibility features.
- Development of the AI-powered voice recognition and text-to-speech functionality
- Testing and debugging of the website, including usability testing with blind users.
- Launch of the website and ongoing maintenance and updates (Ongoing)

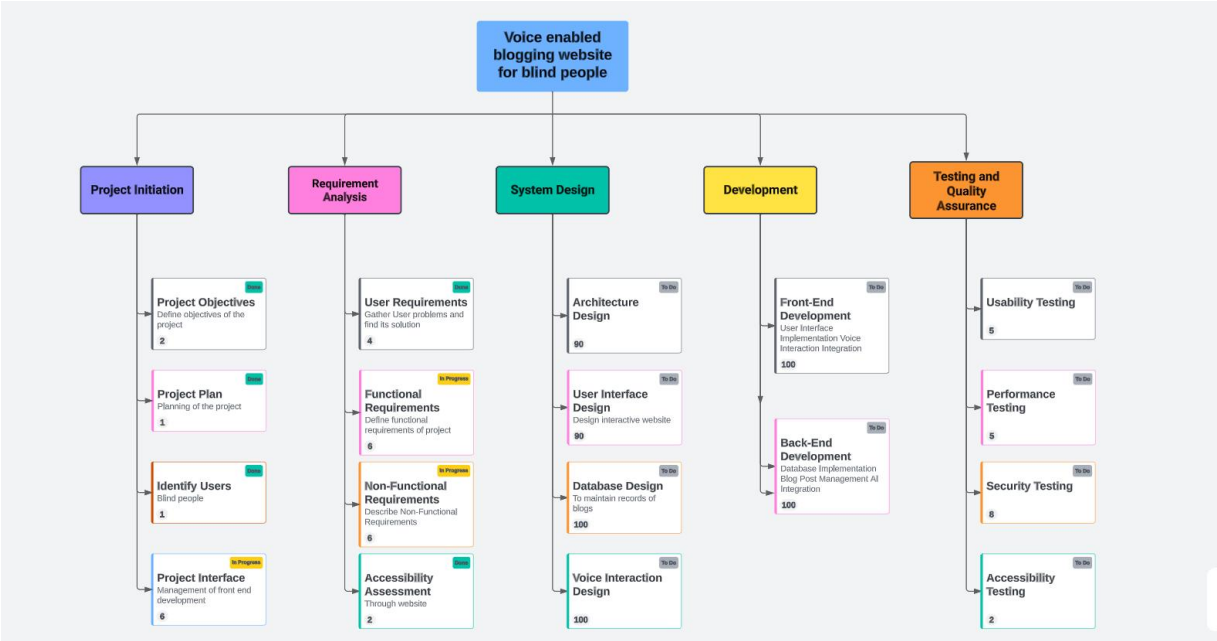
Deliverables:

- A fully functional AI-powered voice-based blogging website for blind people, with the following features:
- A user-friendly interface that is accessible via voice commands or keyboard input
- Text-to-speech functionality for reading blog posts and other content
- AI-powered voice recognition for typing and editing blog posts
- Customizable font sizes and colors for improved readability
- A variety of customizable voices and languages for users to choose from
- Integration with popular screen readers for assistive technology

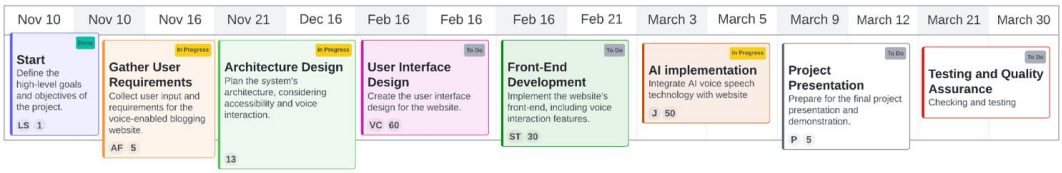
13. Work division among Group members

No work division as I'm working on this project alone.

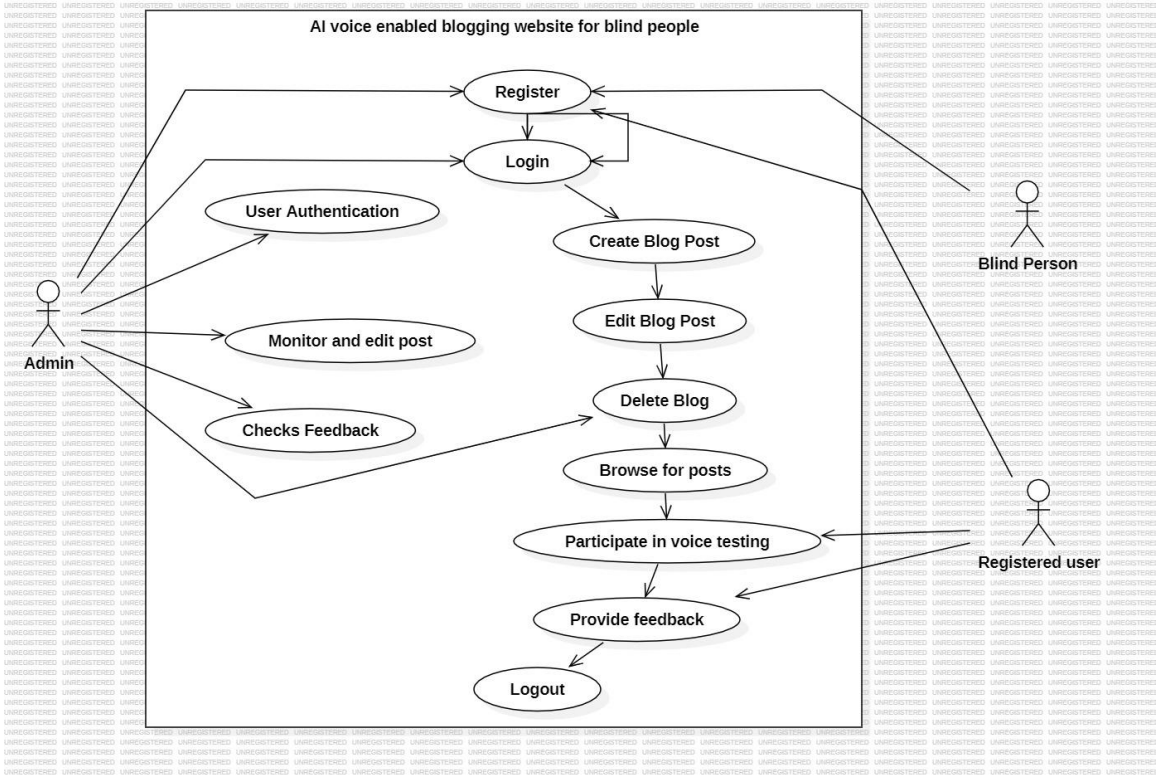
14. Work Breakdown Structure:



15. Gantt Chart:



16. Use Case Diagram:



17.Activity Diagram: