

Inclusive Learn

Submitted in partial fulfillment of the requirements of the degree of

BACHELOR OF COMPUTER ENGINEERING

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(2022-2023)



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CERTIFICATE

This is to certify that the Mini Project 2B entitled “**Inclusive Learn**” is a bonafide work of **Jainam Gala (20102112), Swamini Chaudhari (20102167), Akshaykumar Jain (20102093), Nikita Dung (20102153)**” submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of **Bachelor of Engineering in Computer Engineering**.

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Project Report Approval for Mini Project-2B

This project report entitled “**Inclusive Learn**” by *Jainam Gala, Swamini Chaudhari, Akshaykumar Jain, Nikita Dung* is approved for the partial fulfillment of the degree of *Bachelor of Engineering in Computer Engineering, 2022-23*.

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Signature

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Declaration

We declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Abstract

The use of technology in education has revolutionized the way students learn and access educational resources. However, disabled students face unique challenges that limit their ability to benefit fully from technology-based educational tools. This project aims to develop an educational app specifically designed for disabled students to enhance their learning accessibility and inclusivity. The app will be developed using an iterative design process that involves extensive user testing and feedback to ensure that it meets the unique needs and preferences of disabled students. The app will feature a range of accessibility features, including text-to-speech, closed captioning, audio descriptions, and alternative input methods, such as voice recognition. The app's content will be developed in collaboration with educators and disability experts to ensure that it is aligned with the curriculum and learning goals of disabled students. The app's content will also be designed to accommodate different learning styles, such as visual and auditory. The app's usability and effectiveness will be evaluated through user testing and feedback from disabled students and educators. The project's results will provide valuable insights into the development of educational apps for disabled students and inform future efforts to enhance learning accessibility and inclusivity. The educational app for disabled students has the potential to revolutionize the way disabled students learn and access educational resources. By providing an inclusive and accessible learning environment, the app will help to reduce the educational gap and enhance the academic success of disabled students.

Keywords: Disabled students, inclusive learn, accessibility.

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Chapter 1

Introduction

Education is a fundamental human right that should be accessible to all. However, disabled students face unique challenges that limit their ability to access educational resources and participate fully in learning activities. The advancement of technology has created opportunities to enhance learning accessibility and inclusivity for disabled students. Educational apps, in particular, have the potential to provide personalized and interactive learning experiences that cater to the unique needs and preferences of disabled students. Some people with disabilities interact with the computer using methods other than the conventional monitor, keyboard and mouse; some require special tools, usually referred to as ‘assistive technology’; and some need the way content is presented to them by the computer to be appropriate to their needs (e.g. in terms of font sizes and/or color contrast). These promote compatibility with assistive technology and ensure that different ways of interacting with the computer can be accommodated.

Good design for disabled people is good design for all. Considering the needs of disabled students facilitates reflection on the interactions that support the learning objectives, and addressing the accessibility agenda promotes usability for all.

Disabled students face unique challenges that can make learning difficult. These challenges can be physical, cognitive, or sensory in nature and can affect their ability to access educational resources and participate fully in learning activities. However, with the right accommodations and support, disabled students can achieve academic success and thrive in their educational pursuits.

One approach to enhancing learning for disabled students is to provide accommodations that cater to their unique needs and preferences. For example, students with visual impairments may benefit from Braille materials, audio descriptions, and text-to-speech software. Students with hearing impairments may benefit from closed captioning and sign language interpreters. Students with physical disabilities may benefit from adaptive equipment, such as wheelchair-accessible desks and computer equipment.

Another approach is to provide inclusive learning environments that cater to different learning styles and preferences. This can be achieved by incorporating different teaching methods and materials, such as visual aids, hands-on activities, and interactive technologies. Inclusive learning environments can also encourage collaboration and peer support, which can help to create a sense of community and belonging for disabled students.

Education is a fundamental human right that should be accessible to all, including disabled students who face unique challenges that can limit their ability to access educational resources and fully participate in learning activities. However, advancements in technology have opened up opportunities to enhance learning accessibility and inclusivity for disabled students. Educational apps, in particular, have emerged as powerful tools that can provide personalized and interactive learning experiences tailored to the unique needs and preferences of disabled students.

One significant aspect of designing educational apps for disabled students is ensuring compatibility with assistive technology. Some disabled individuals interact with computers using methods other than the conventional monitor, keyboard, and mouse, often relying on specialized tools known as assistive technology. These tools enable them to navigate and interact with digital content effectively. By incorporating features that are compatible with assistive technology, educational apps can ensure that students with different ways of interacting with computers can be accommodated, promoting inclusivity.

Considering the needs of disabled students also facilitates reflection on the interactions that support learning objectives. By incorporating various teaching methods, materials, and tools, educational apps can create inclusive learning environments that cater to different learning styles and preferences. Visual aids, hands-on activities, and interactive technologies can be integrated into the app's design to engage students and facilitate comprehension. Moreover, fostering collaboration and peer support within educational apps can create a sense of community and belonging, benefiting all students, including those with disabilities.

Educational apps offer several advantages in supporting disabled students. They enable personalized learning experiences, adapting the content and difficulty level to match each student's abilities and progress. Additionally, these apps can seamlessly integrate assistive technologies, allowing students with disabilities to access and interact with the content effectively. By incorporating multi-sensory elements, educational apps can cater to diverse learning styles and preferences, promoting better comprehension and retention. Accessibility features within the apps, such as adjustable font sizes and alternative navigation methods, ensure that students with visual impairments or physical disabilities can navigate and engage with the app. Furthermore, educational apps facilitate collaboration and communication, fostering a sense of community and inclusion for all students.

Chapter 2

Literature Survey

1. Fichten CS, Ferraro V, Asuncion JV, Chwojka C, Barile M, Nguyen MN, et al. Disabilities and e-learning problems and solutions: An exploratory study. *Educational Technology & Society*. 2009;12(4):241-256

This study explored e-learning problems and solutions reported by 223 students with disabilities, 58 campus disability service providers, 28 professors, and 33 e-learning professionals from Canadian colleges and universities. All four groups indicated, via online questionnaires, problems with: accessibility of websites and course/learning management systems (CMS); accessibility of digital audio and video; inflexible time limits built into online exams; PowerPoint/data projection during lectures; course materials in PDF, and lack of needed adaptive technologies. Students also mentioned technical difficulties using e-learning and connecting to websites and CMS, problems downloading and opening files, web pages that would not load, video clips taking too long to download, poor use of e-learning by professors and their own lack of knowledge working with e-learning. Disability service providers, too, mentioned the poor use of e-learning by professors as well as poor accessibility of course notes and materials in many formats. E-learning professionals noted difficulties with inaccessible course notes and materials. Professors identified mainly problems raised by the other groups. Sixty-seven percent of students, 53% of service providers, 36% of e-learning professionals and 35% of professors indicated that at least one of their three e-learning problems remained unresolved. They discussed how the different roles and perspectives of the four participant groups influence their views, and make recommendations addressing identified common e-learning problems.[1]

2. Petretto DR, Carta SM, Cataudella S, Masala I, Mascia ML, Penna MP, et al. The use of distance learning and e-learning in students with learning disabilities: A review on the effects and some hint of analysis on the use during COVID-19 outbreak. *Clinical Practice and Epidemiology in Mental Health: CP & EMH*. 2021;17:92. DOI: 10.2174/1745017902117010092.[2]

The present paper discussed advantages and disadvantages of the use of Distance Learning and E-learning in students with LDs. We can summarize some points of interests in the study, according to the papers analysed in the review: E-learning and Distance learning have a long

tradition in promoting learning and keeping in touch schools and university with students, and this aspect has become a need and an even more important feature during the current pandemic experience;[2]

This paper has some limitations, one specific limitation is related to the fact that the papers included in the review considered the use of E-learning and distance learning before its massive use during COVID-19 outbreak and further research is needed to compare more directly previous and current use of E-learning in students with LD. [2]

3. H. Hashim and S. Khadijah, "E-LEARNING ENVIRONMENT FOR HEARING IMPAIRED STUDENTS," *The Turkish Online Journal of Educational Technology*, vol. 12, no. 4, 2013, This paper discussed that, the usage of technology within the educational department has become more vital by each year passing. One of the most popular technological approaches used is the e-learning environment. The usage of e-learning environment in education involves a wide range of types of students, and this includes the hearing-impaired ones. Some adjustment or enhancement needs to be implemented within the e-learning environment, based on the needs or the adaptability of the hearing-impaired students accordingly. This paper reviews some of the past researches on the usage of the e-learning environment for hearing impaired students for the past decade or so. This paper only contains hearing disability benefits.[3]
4. S. Paramasivam, I. A. Krishnan, A. S. Amin, N. Kaliappen, R. S. Sidhu, and H. Anbalagan, "Challenges Faced by Disabled Students in Online Learning during the COVID-19 Pandemic," *International Journal of Academic Research in Business and Social Sciences*, vol. 12, no. 1, Jan. 2022
Online learning conducted in institutions of higher learning during this Covid-19 pandemic should benefit all students. However, findings from this study reveal that the disabled faced many challenges which gave an impact on their mental and emotional health as they were unable to perform as well as their other counterparts in their learning process. The results obtained from this study indicate that there is a need for universities to develop committees that can devote attention. These committees can come up with specific guidelines for these disabled students and make the necessary recommendations to the academic staff who conduct the online classes, record lectures and various tests to consider these disabled students in the teaching-learning and assessment process.[4]

REFERENCES	APPLICATION	Drawbacks	Overview
[1] Disabilities and e-learning problems and solutions: An exploratory study. Educational Technology & Society.	This study explored e-learning problems and solutions.	Technical difficulties using e- learning and connecting to websites and CMS, problems downloading and opening files, web pages that would not load.	Reviewed and discussed the problems in the existing systems
[2] The use of distance learning and e-learning in students with learning disabilities.	Used for distance learning and learning disabilities	Distance and learning disability.	A review on the effects and some hint of analysis on the use during COVID-19 outbreak.
[3] E-Learning environment for hearing impaired students	Used for hearing disability	Some enhancements required to be improved in the e-learning environment for better and easy learning.	This paper reviews some of the past researches on the usage of the e-learning environment for hearing-impaired students for the past decade.
[4] Challenges Faced by Disabled Students in Online Learning during the COVID-19 Pandemic	Used for disabled students dealing with mental obstacles	There is a need to prepare pragmatic solutions to allow academics, teachers, and facilitators to adapt comfortably to new norms in teaching and learning.	This study reveal that the disabled faced many challenges on mental and emotional health.

Chapter 3

Problem Statement, Objective & Scope

3.1 Problem Statement: -

To design a web app to facilitate a better e-learning platform for disabled students.

The extent of how the pandemic has upended students' lives are manifold, but some bear the brunt more than others. Disabled students have faced unique challenges to their academic journey throughout the pandemic. It has been researched that to comply with the lockdown restrictions various university management excluded the minority group of students with disabilities while focusing on e-learning. Due to this there were several challenges encountered by the disabled students while using e-learning platforms like accessing and navigating the platform, audio content, sign language interpretation, difficulty while using a computer or a device and they may require addition assistance.

3.2 Objective: -

1. The main objective of our platform is to provide equal educational opportunities to all learners, regardless of their abilities.
2. To offer a wide range of interactive and engaging educational content, including questionnaires and quizzes to cater to different learning styles.
3. To include assistive technology like closed captioning, audio descriptions, object detection and sign language interpretation to make content accessible to all learners.
4. To offer a safe and inclusive environment that is dedicated to breaking down barriers and creating a world where all children have equal access to education & the tools they need to reach their full potential.

3.3 Scope: -

1. **Accessibility Features:** The web app can include accessibility features like closed captioning, and adjustable text size, contrast, and color to ensure that all users can access the content.
2. **Customized learning experiences:** The web app could offer personalized learning experiences based on the individual needs of disabled students. For example, students with visual impairments could receive audio-based instruction and feedback.
3. **Multimodal content:** The web app could provide content in multiple formats, such as text, audio, and video, to accommodate different learning styles and preferences.
4. **Disability-specific content:** The web app could offer disability-specific content, such as information on voice assistive technology and resources for disabled students.
For eg- Sign Language Interpretation and Voice Assistance.
5. **Inclusive design:** The web app will be designed with inclusivity in mind, taking into account the needs of all users, including those with visual, auditory, or motor impairments.
6. **Flexibility:** The app can offer flexibility in terms of scheduling and pacing, allowing disabled students to learn at their own pace and on their own schedule.
7. **Cost-Effective:** The app can be a cost-effective alternative to traditional education, as it can reduce the need for expensive assistive technology and provide access to education for students who may live in remote areas or have limited mobility.
8. **Scalability:** The app can be easily scalable, allowing for growth and expansion, providing access to education for more disabled students.

Chapter 4

Proposed system

To overcome the existing systems needs we have come up with the web app which is accessible to all types of disabilities, including visual, auditory, and physical disabilities. It is designed with assistive technologies, such as screen readers, text-to-speech, and keyboard shortcuts, to cater to the needs of disabled students. Overall, our aim is to provide a comprehensive and inclusive e-learning platform for disabled students, that supports their learning needs and goals, and helps them achieve academic success.

Following are some of the needs which are included in the web app:-

Accessible Design: The web app is designed with accessibility in mind, adhering to WCAG guidelines to ensure that all disabled students can access the content. This includes providing alternative text descriptions for images, captions for videos, and audio descriptions.

Multi-Modal Learning: The web app will offer multi-modal learning options, such as text, audio, and video, to cater to different learning styles. Additionally, it will offer the option to adjust the speed of audio and video content to accommodate different processing speeds, also it will offer a feature which will allow them to change the contrast and light settings in the live model like in object detection.

Inclusive Community: The app should foster an inclusive community where disabled students can interact with their peers and teachers, collaborate on projects, and receive support. This can be achieved through forums, discussion boards, and group projects.

4.1 Architecture Diagram: -

Architecture Diagram: - An architecture diagram is a visual representation of the components, relationships, and interactions of a system. Architecture diagrams are useful for communicating the design and functionality of a system to stakeholders, developers, and other interested parties.

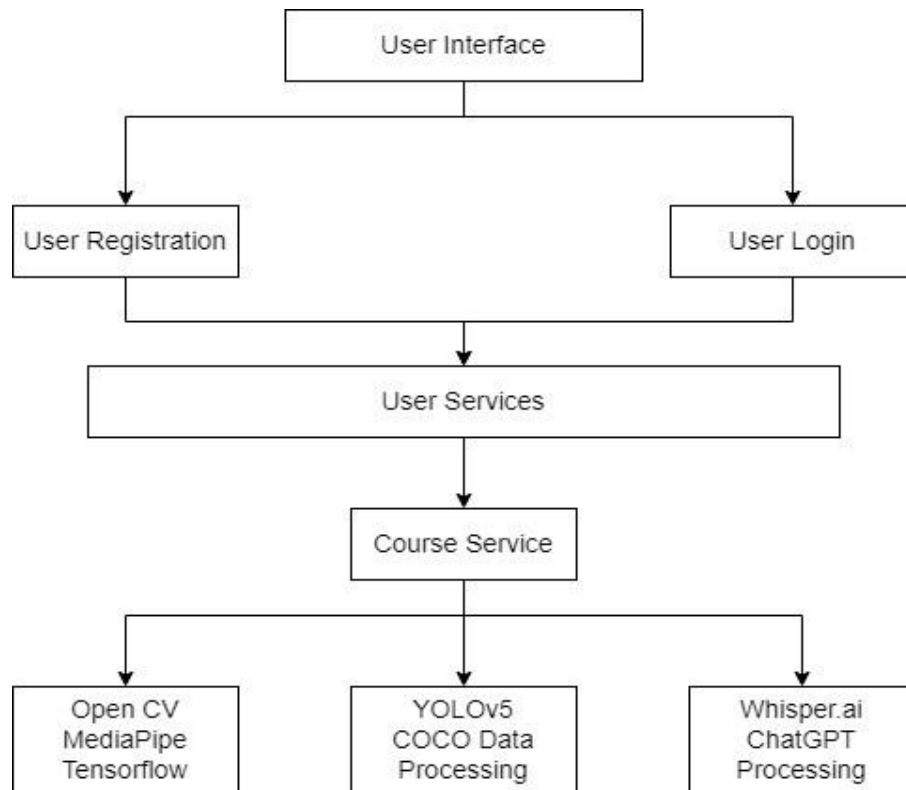


Figure 4.1 Architecture Diagram

The above architecture diagram illustrates about the components of the Inclusive Learn. The architecture diagram explains about the features and all the services which are provided in the web appit includes three models and a user interface with backend that connects the model and interface for students and faculties to get access to the web app.

4.2 Data Flow Diagrams: -

Data Flow Diagram: - Data Flow Diagram (DFD) is a graphical representation of how data flows through a system, illustrating the input, output, and processing of data. It is a modelling technique used to analyze and design information systems, which helps to identify the data sources, data destinations, data flows, and processes of a system.

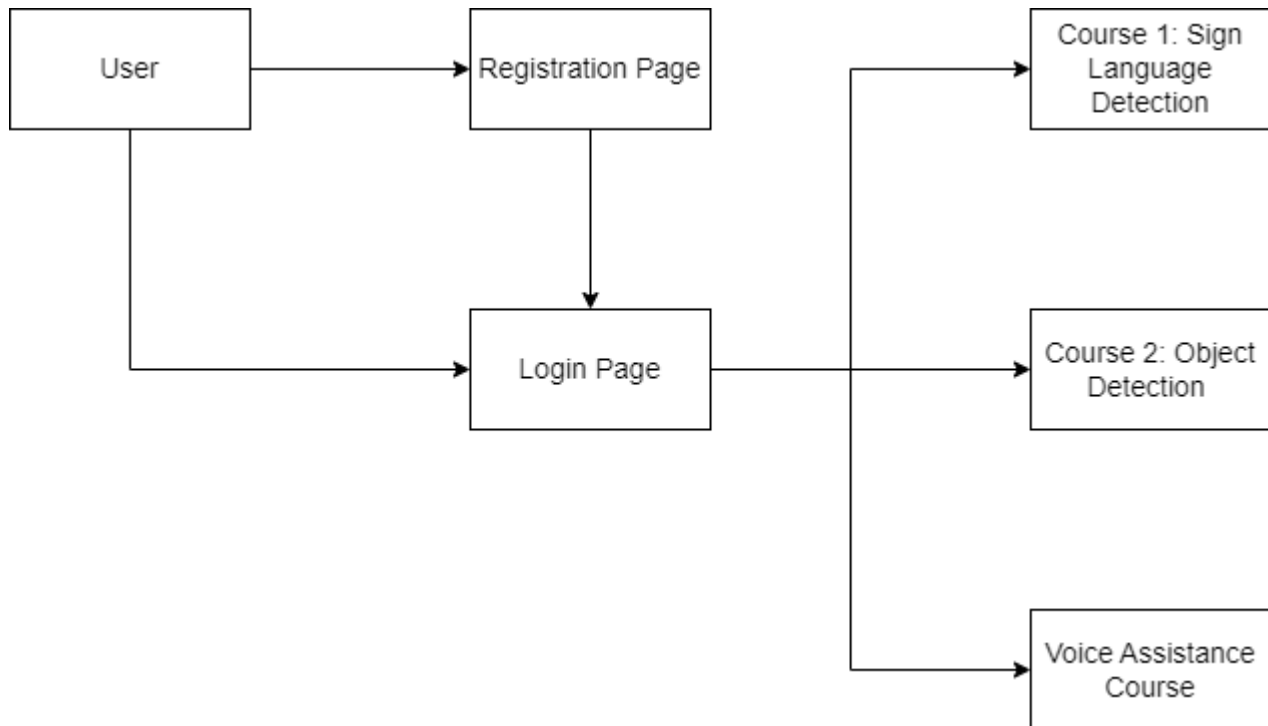


Figure 4.2.1 DFD level 0

In DFD level 0, user register to the web app and then gets access to the user interface and checks the availability of the courses.

A Level 1 data flow diagram (DFD) provides an overview of the main processes and data flows in a system. It shows the high-level flow of data through a system and how the system interacts with external entities.

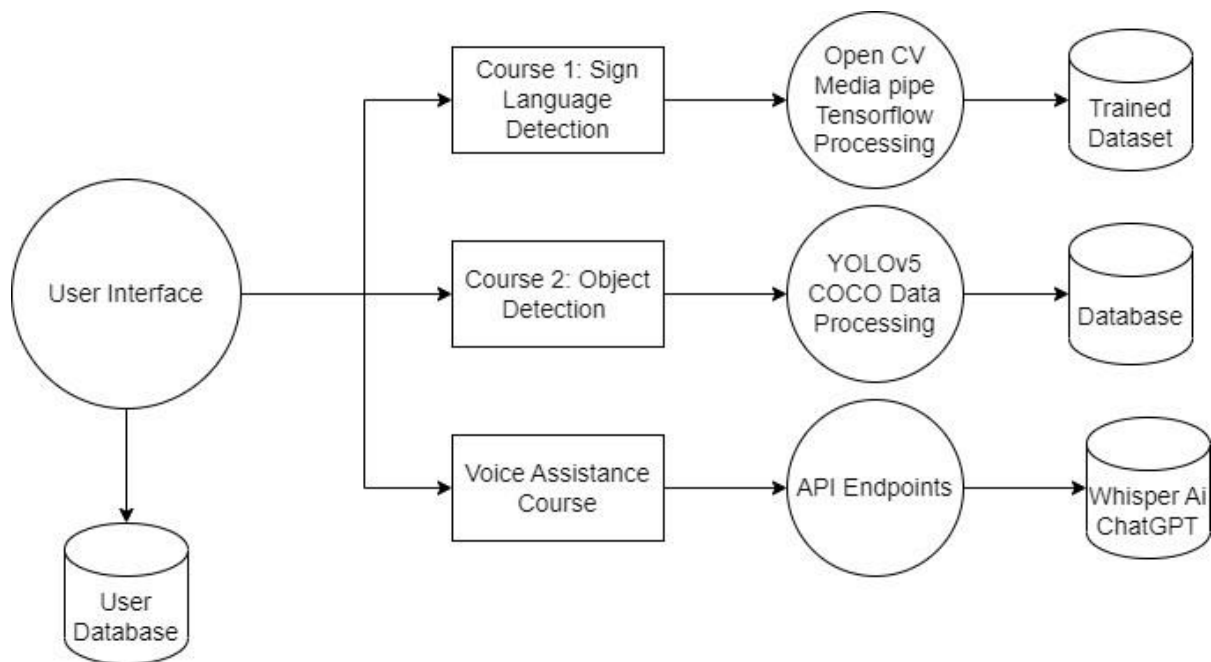


Figure 4.2.2 DFD Level 1

In DFD level 1, the user interface is connected to the database and user interacts with the courses and available features of the web app and gets his/her own credentials to use the web app and can use the models that are trained for learning purpose and can also contact their faculties and professors.

4.3 Use Case Diagram: -

A use case diagram is a graphical depiction of a user's possible interactions with a system. A use case diagram shows various use cases and different types of users the system has and will often be accompanied by other types of diagrams as well. The use cases are represented by either circles or ellipses.

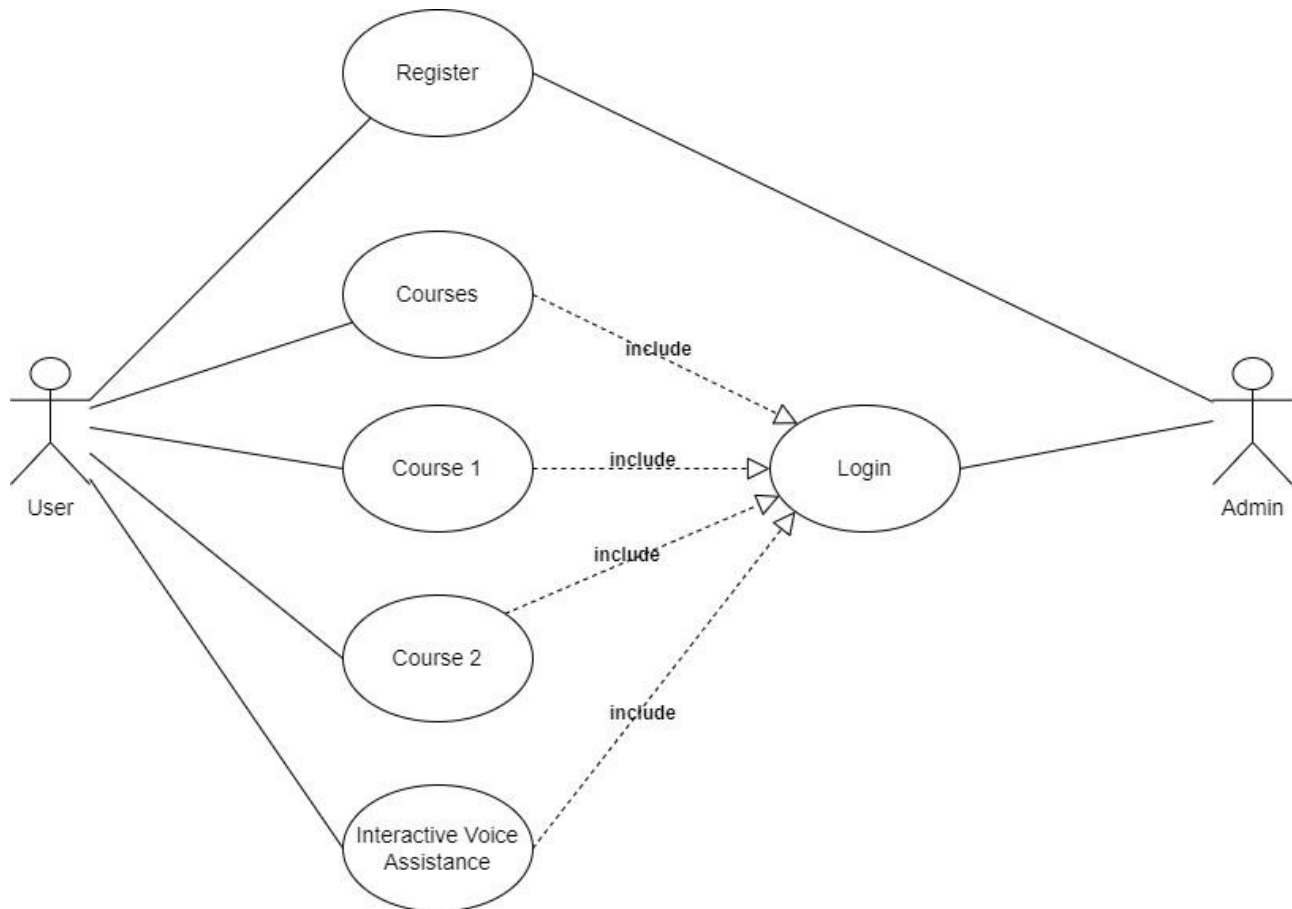


Figure 4.3 Use Case

Use case diagram represents the two actors which are involved while using the application and the several entities like login/register which should be done by both user and emergency contacts. User and Admin both the entities need to add their personal details for any credentials and for any queries.

Chapter 5

Project Planning

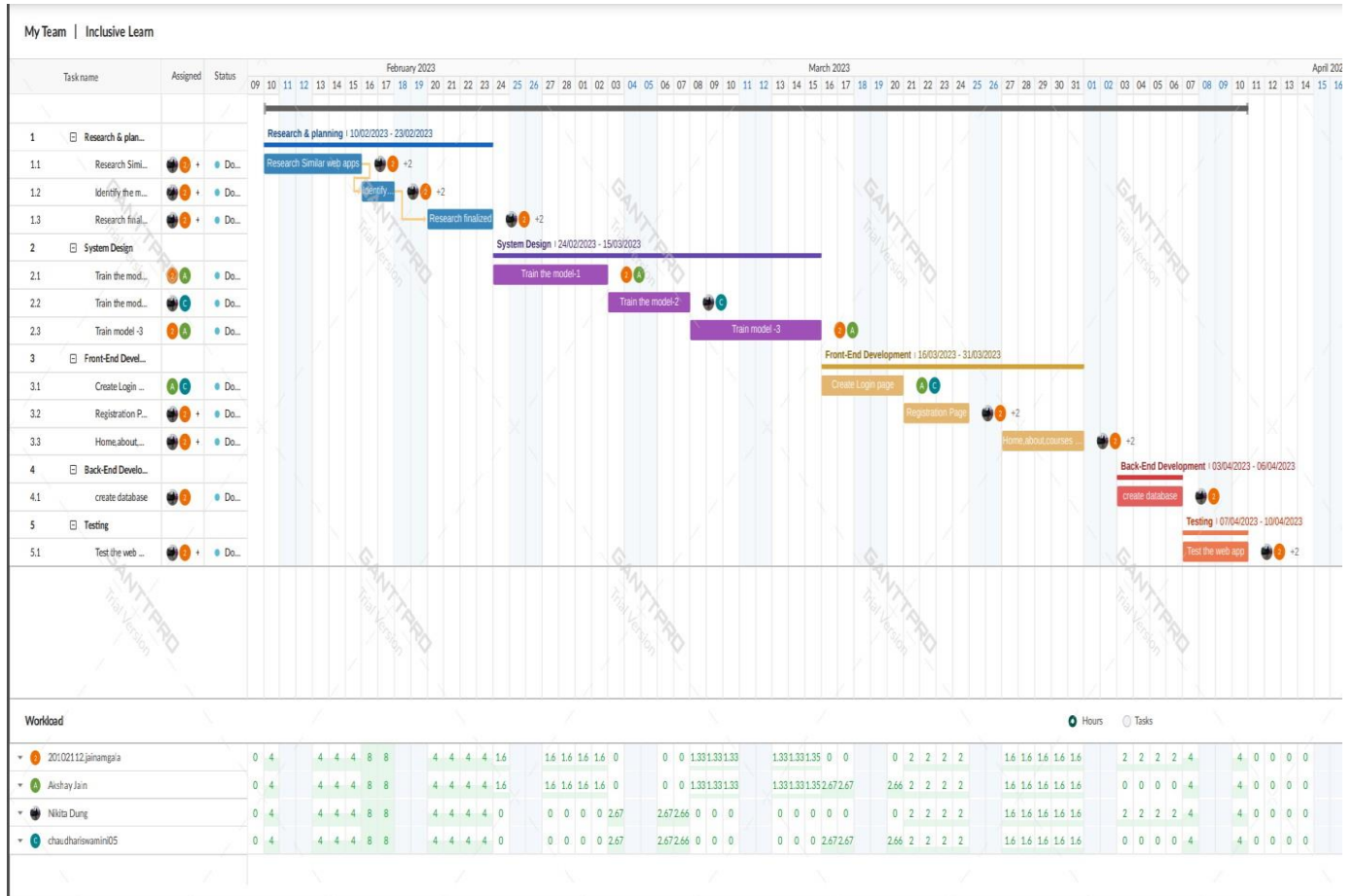


Figure 5.1 Gantt Chart

Chapter 6

Experimental Setup

- **Software Requirements: -**

- **1. Frontend: -**

- **HTML5** - HTML5 is a markup language used for structuring and presenting content on the World Wide Web. It is the fifth and final major HTML version that is a World Wide Web 22 Consortium recommendation. The current specification is known as the HTML Living Standard. HTML works by using tags and attributes to markup content, which can include text, images, videos, and other multimedia elements. The tags describe the structure and meaning of the content, while the attributes provide additional information about how the content should be displayed or behave.
- **CSS3** - Cascading Style Sheets is a style sheet language used for describing the presentation of a document written in a markup language such as HTML or XML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript. CSS is used to style and layout web pages — for example, to alter the font, color, size, and spacing of your content, split it into multiple columns, or add animations and other decorative features.
- **JavaScript (ES13)** – JavaScript is a programming language that is one of the core technologies of the World Wide Web, alongside HTML and CSS. It is used to program the behavior of web pages. JavaScript is a lightweight, interpreted programming language. It is designed for creating network-centric applications. It is complimentary to and integrated with Java. JavaScript is very easy to implement because it is integrated with HTML. It is open and cross- platform. JavaScript is a high-level, interpreted language, which means that it is designed to be easy to use and does not require compilation or other complex setup procedures. It is often used alongside HTML and CSS to create interactive effects, such as animations, user interfaces, and data visualizations.

2. Backend: -

- **Flask** is a lightweight and flexible web framework for building web applications in Python. It is considered a micro-framework, meaning it provides the core functionality required for web development without imposing any restrictions on the developer's choice of tools and libraries. Flask is often used for building small to medium-sized web applications, APIs, and prototypes. It is also a popular choice for creating RESTful APIs due to its flexibility and ease of use. Flask is open source and has a large community of contributors, making it easy to find tutorials, documentation, and examples to help with development. Building an e-learning app for disabled students using Flask requires careful planning, design, and development to ensure that it meets the needs of the users and provides an effective and inclusive learning experience.

• **Hardware Requirements: -**

1. CPU: 32-Bit CPU or 64-Bit CPU (Intel/AMD architecture)
2. RAM: Minimum 4GB RAM
3. STORAGE: 1 GB Free Disk Space
4. OS: Linux-Ubuntu, Windows 7-11
5. SURVEILLANCE CAMERA
6. LAPTOP OR DESKTOP

Chapter 7

Implementation Details

1. Course 1 – Hand Gesture Recognition for Sign Language Detection Using Media Pipe Hands

Hand Gesture Recognition for Sign Language Detection Using Media Pipe Hands is a cutting-edge technology that combines computer vision and machine learning to interpret hand gestures used in sign language. Media Pipe Hands is a powerful hand-tracking library developed by Google that can accurately detect and track hand landmarks in real-time video streams. This technology utilizes deep learning algorithms to analyze the position, orientation, and movement of the hand landmarks to recognize various sign language gestures.

2. Course 2 – Live Object Detection Using YOLO v5

Live Object Detection using YOLO v5 is a state-of-the-art computer vision technology that allows real-time detection and localization of objects in video streams. YOLO (You Only Look Once) v5 is a popular and highly efficient object detection algorithm that uses deep neural networks to detect objects in images and videos with remarkable accuracy and speed. With its advanced architecture, YOLO v5 is capable of detecting multiple objects simultaneously, even in complex scenes, making it ideal for real-time applications.

3. Intelligent Voice Assistant Using Whisper.ai and ChatGPT

An Intelligent Voice Assistant using Whisper.ai and ChatGPT combine the power of two advanced technologies to create a seamless voice-controlled conversational experience. Whisper.ai is an automatic speech recognition (ASR) system developed by OpenAI that leverages deep learning to accurately transcribe spoken language into text. ChatGPT, on the other hand, is a large language model that can generate human-like responses in a conversational manner.

Chapter 8

Result

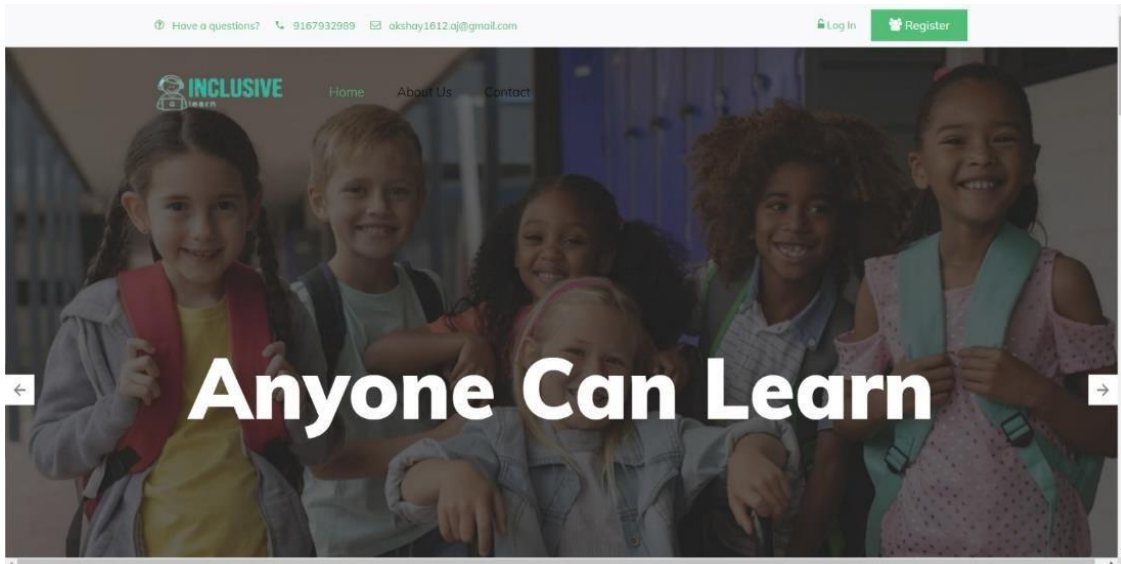


Figure 8.1: - Home Page

Description: - Secure access to student and faculty information and personalized user experiences based on role and permissions.

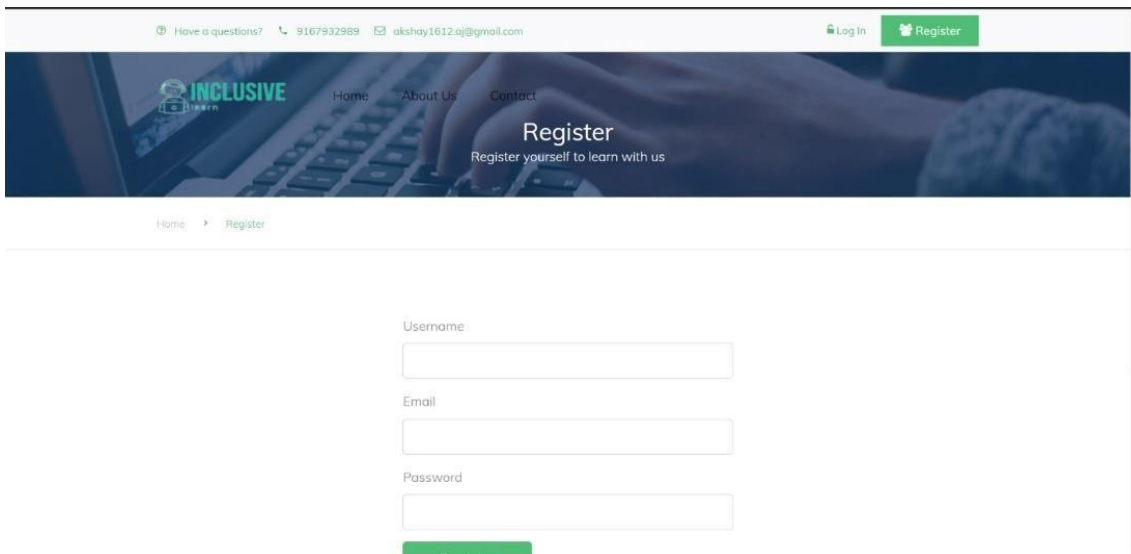
A screenshot of the 'Inclusive Learning' website's registration page. The header is identical to the home page. The main banner shows a hand typing on a keyboard with the text 'Register' and 'Register yourself to learn with us'. Below the banner, a breadcrumb trail shows 'Home > Register'. The registration form contains three input fields: 'Username', 'Email', and 'Password', followed by a green 'Register' button.

Figure 8.2 Registration page

Description: - Secure access to student and faculty to register themselves.

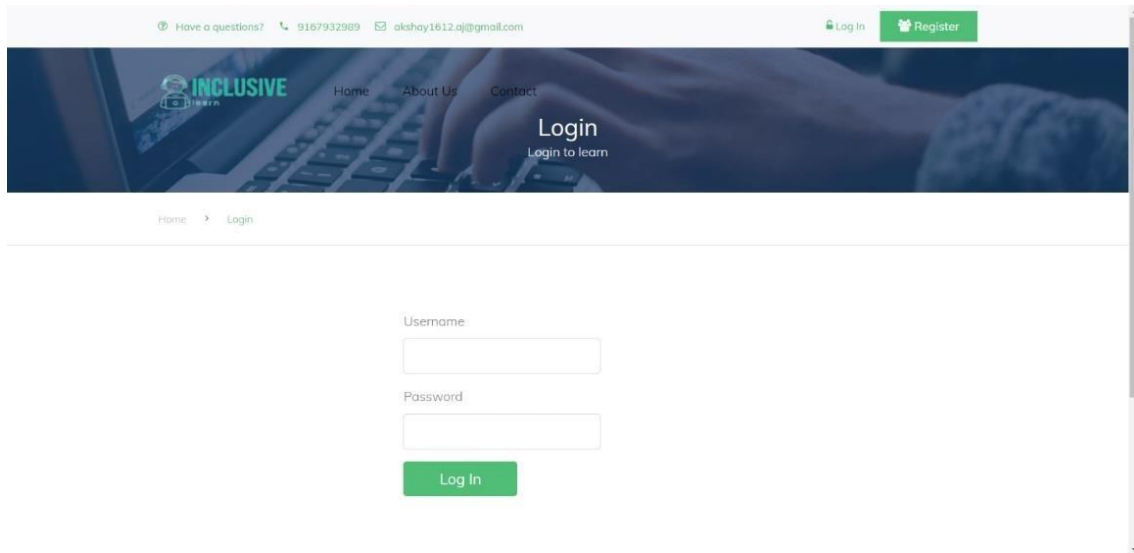


Figure 8.3 Login Page

Description: - Secure access to student and faculty to Login themselves.

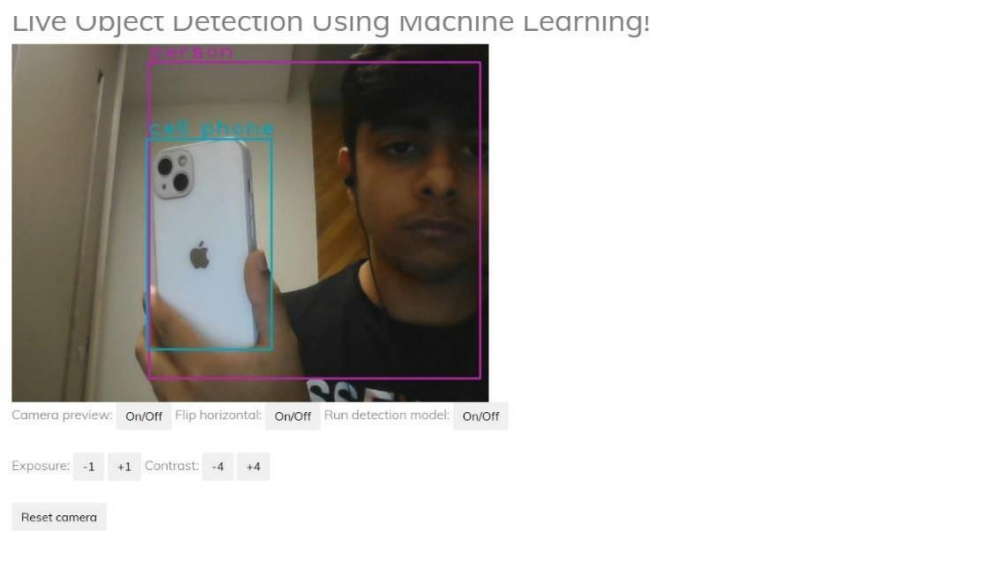


Figure 8.4 Learning: - Course 1

Description: - Live Detection of an object which can help students to learn new things using live cameras

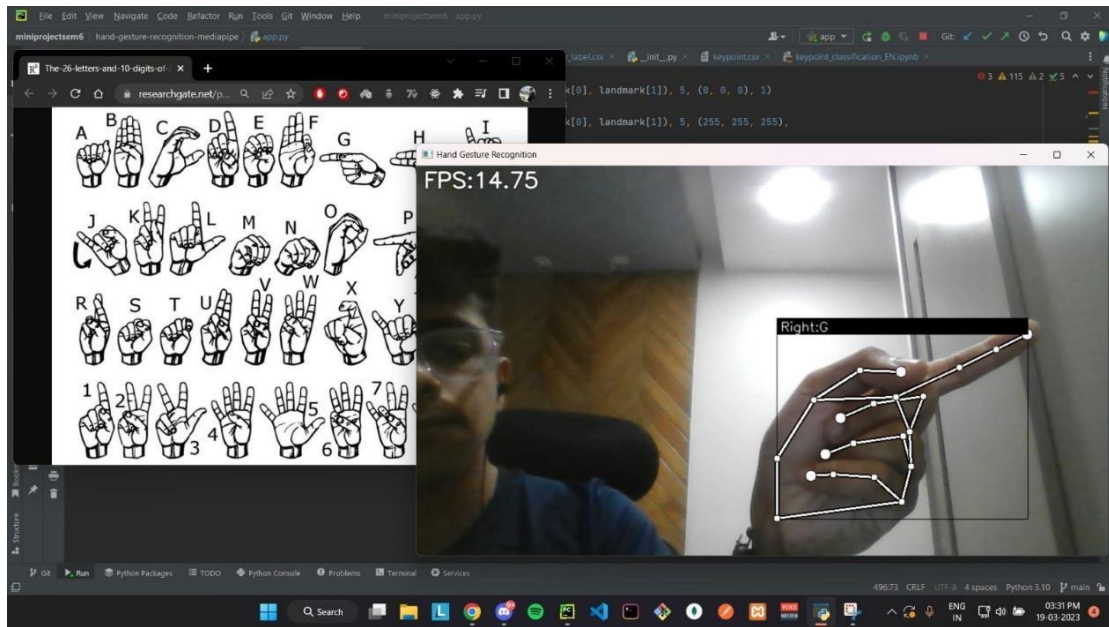


Figure 8.5 Learning: - Course 2

Description: - Sign Language detection for disable students

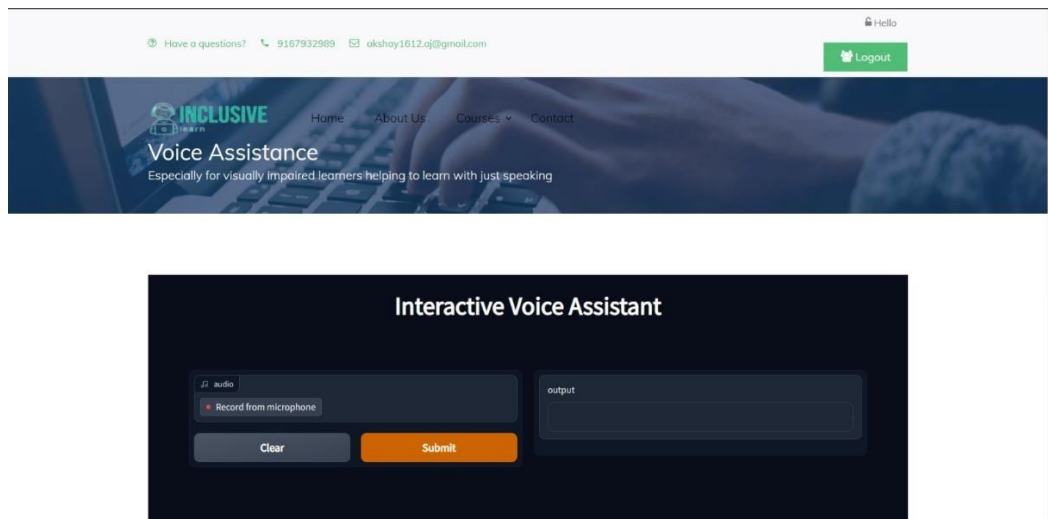


Figure 8.6 Learning: - Course 3

Description: - Interactive Voice Assistant to learn speaking.

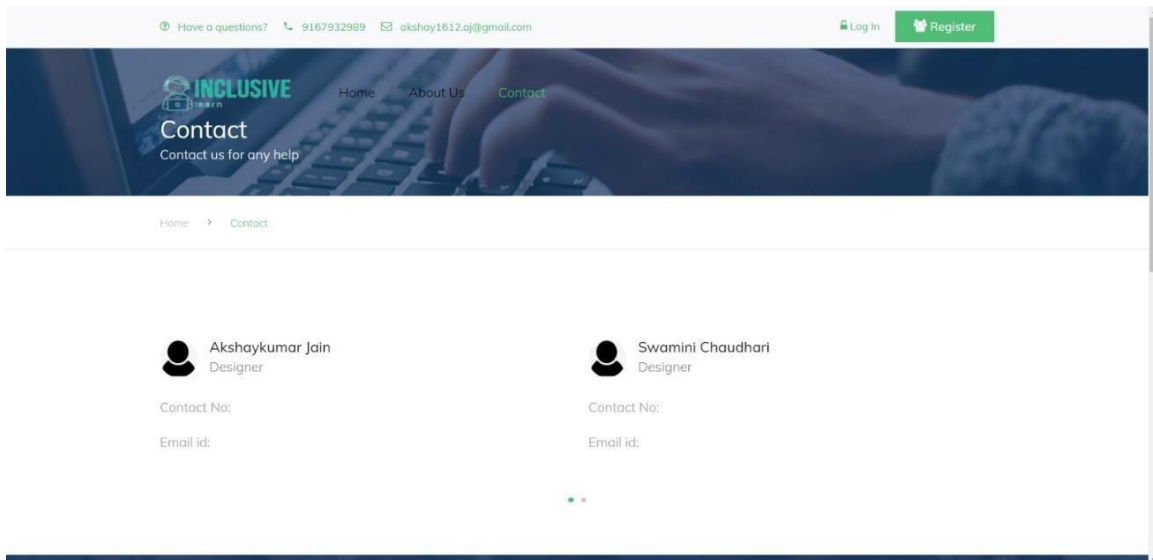


Figure 8.7 About Us Page

Description: - For contact details and about us.

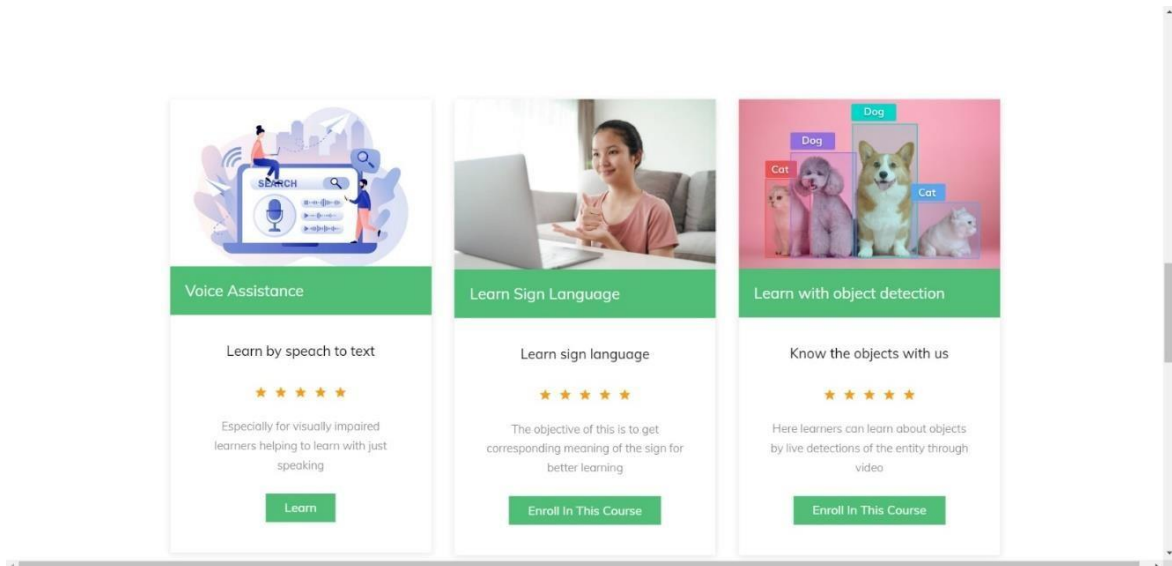


Figure 8.8 About Us Page

Description: - For contact details and about us.

Chapter 9

Conclusion

The aim of our study was to contribute to laying the groundwork for a better understanding of online e-learning platform accessibility targeted at persons with cognitive impairments. There is a paucity of studies that address the accessibility of e-learning for persons with cognitive impairments. Additionally, the studies available tend to focus more on design recommendations than on evaluating the effectiveness of e-learning systems. Creating an e-learning app for disabled students is an important step towards promoting equal access to education for all. It can significantly improve the learning experience of disabled students, help them overcome barriers and challenges, and provide them with the tools and resources they need to succeed academically. Creating an e-learning app for disabled students is to address the unique needs and challenges faced by this group of students. Traditional learning methods and materials may not be accessible or effective for disabled students, and they may struggle to keep up with their peers. The e-learning app can provide customized, adaptive, and inclusive learning experiences that cater to the individual needs and abilities of each student. Firstly, it can improve their learning outcomes and academic performance by providing them with tailored learning materials and resources. Secondly, it can promote independence and self-reliance, as disabled students can access the app from anywhere and at any time. Thirdly, it can enhance social interaction and communication skills by facilitating online discussions and collaborative activities. Finally, it can reduce the stigma and isolation that disabled students may face in traditional classroom settings, by creating a more inclusive and supportive learning environment.

References

- [1] Fichten CS, Ferraro V, Asuncion JV, Chwojka C, Barile M, Nguyen MN, et al. Disabilities and e-learning problems and solutions: An exploratory study. *Educational Technology & Society*. 2009;12(4):241-256
- [2] Petretto DR, Carta SM, Cataudella S, Masala I, Mascia ML, Penna MP, et al. The use of distance learning and e-learning in students with learning disabilities: A review on the effects and some hint of analysis on the use during COVID-19 outbreak. *Clinical Practice and Epidemiology in Mental Health: CP & EMH*. 2021;17:92. DOI: 10.2174/1745017902117010092
- [3] H. Hashim and S. Khadijah, "E-LEARNING ENVIRONMENT FOR HEARING IMPAIRED STUDENTS," *The Turkish Online Journal of Educational Technology*, vol. 12, no. 4, 2013
- [4] S. Paramasivam, I. A. Krishnan, A. S. Amin, N. Kaliappen, R. S. Sidhu, and H. Anbalagan, "Challenges Faced by Disabled Students in Online Learning during the COVID-19 Pandemic," *International Journal of Academic Research in Business and Social Sciences*, vol. 12, no. 1, Jan. 2022

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