

# **ACCESSIBLE AUDIOBOOK CONVERTER**

## **A PROJECT REPORT**

*Submitted by*

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***MINI-PROJECT: ACCESSIBLE AUDIOBOOK CONVERTER***

*in partial fulfilment for the award of the degree of*

**BACHELOR OF TECHNOLOGY**

*in*

**INFORMATION TECHNOLOGY**



**PSNA COLLEGE OF ENGINEERING AND TECHNOLOGY**  
(An Autonomous Institution, Affiliated to Anna University, Chennai)

**DINDIGUL - 624622**

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**BONAFIDE CERTIFICATE**

Certified that this idea report “**ACCESSIBLE AUDIOBOOK CONVERTER**” is the bonafide work of “**AKSHAYA DEVI A(92132223011), ARSHIYA I(921322230), ASHMITHA GA(921322230)**” who carried out the idea work under my supervision in filing the patent work.

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Submitted for the idea on \_\_\_\_\_

## **ABSTRACT:**

The Accessible Audiobook Converter is an innovative software solution designed to improve access to literature for individuals with visual impairments and reading disabilities. This tool addresses a critical gap in the availability of reading resources by converting various text formats such as eBooks, PDFs, and digital documents into high-quality audiobooks. Utilizing advanced text-to-speech technology, the converter not only reads text aloud but also delivers a natural and engaging auditory experience. Key features of the Accessible Audiobook Converter include customizable voice options that allow users to select from a variety of voices, accents, and tones, thus catering to individual preferences. Additionally, the tool offers adjustable reading speeds, enabling users to tailor the pace of narration to their comfort level and comprehension needs.

Another significant feature is synchronized text highlighting, which illuminates the text as it is read aloud, enhancing visual tracking and reinforcing the connection between spoken and written language—particularly beneficial for those with reading difficulties. The converter is compatible with multiple file formats, ensuring versatility across different content types and ease of integration with popular eBook platforms. Its user-friendly interface is designed with accessibility in mind, allowing individuals of varying technical abilities to navigate the tool effectively. The significance of accessibility in literature is paramount, as it empowers individuals to explore a wider array of literary works for education, professional development, and personal enjoyment.

By providing an alternative means of consuming text, the Accessible Audiobook Converter fosters inclusivity, encouraging a love for reading and supporting lifelong learning. In educational contexts, the converter serves as a crucial resource, enabling teachers to create inclusive classroom environments where all students can engage with the same materials. It helps to facilitate participation in discussions, enhances critical thinking skills, and promotes equity in access to information.

This report will delve into the functionality, usability, and impact of the Accessible Audiobook Converter, drawing on user experiences and feedback to illustrate its effectiveness in reshaping the reading landscape. By enhancing accessibility and promoting engagement with literature, the Accessible Audiobook Converter represents a significant advancement in the way we approach reading and learning for individuals with diverse needs.

## **INTRODUCTION:**

In our increasingly digital age, access to literature and information is crucial for personal and educational growth. Unfortunately, individuals with visual impairments and reading disabilities often face significant barriers that limit their ability to engage with text-based materials. Traditional reading methods can be overwhelming, leading to feelings of exclusion and hindering learning opportunities.

The Accessible Audiobook Converter addresses these challenges by enabling users to transform various text formats—such as eBooks and PDFs—into high-quality audiobooks. By leveraging advanced text-to-speech technology, this tool allows users to listen to literature in a natural and engaging manner, fostering a sense of independence and empowerment.

## **PROBLEM STATEMENT:**

In today's fast-paced, information-driven society, the way we consume written content is evolving. Many individuals find it challenging to allocate dedicated time for reading due to busy schedules, leading to missed opportunities for learning and enjoyment. Traditional methods of accessing written material, such as physical books or static digital formats, do not cater to the growing need for flexibility in content consumption. As a result, there is an increasing demand for an efficient audiobook converter that can seamlessly transform text into audio format, allowing users to listen while multitasking or on the go.

The challenge lies in developing a system that can accurately and quickly convert a wide variety of written documents—including PDFs, eBooks, and articles—into high-quality audio files. This solution must not only preserve the original formatting and meaning of the text but also offer customizable voice options to enhance user experience. Additionally, the converter should support multiple languages and accents to cater to a diverse audience.

## CHALLENGES:

1. Handling various text formats (PDFs, eBooks, etc.) can lead to inconsistent quality and formatting issues in conversion.
2. Ensuring accurate pronunciation, intonation, and context in text-to-speech output can be technically complex
3. Providing a range of voice options and adjustments (speed, pitch) that meet diverse user preferences while maintaining clarity.

## PROPOSED MODEL:

The proposed audiobook converter aims to improve flexibility and accessibility in content consumption

by allowing users to convert written material, such as PDFs and eBooks, into high-quality audio files. Key objectives include preserving the original structure of documents and offering customizable voice options in various languages and accents. The user-friendly interface simplifies document uploads and audio management.

Key features include compatibility with multiple file formats, advanced text-to-speech (TTS) technologies for natural-sounding audio, and customizable settings for speech rate, volume, and pitch. The converter also supports bookmarking, playlist creation, and offline access.

The implementation plan involves using cloud-based services and AI-driven TTS engines, with development phases that include researching TTS technologies, building the conversion engine, and conducting user testing before launch. User engagement will be fostered through a community platform for feedback.

In summary, this audiobook converter addresses the need for efficient content consumption in a fastpaced society, enhancing user experience and providing accessible ways to engage with written material, thereby transforming access to information and storytelling

## SOURCE CODE:

### Backend code:(python)

```
import PyPDF2
import pytsx3

# Initialize pytsx3 engine
engine = pytsx3.init()

# Function to extract text from a PDF
def extract_text_from_pdf(pdf_file_path):
    text = ""
    with open(pdf_file_path, "rb") as file:
        reader = PyPDF2.PdfReader(file)
        for page_num in range(len(reader.pages)):
            page = reader.pages[page_num]
            text += page.extract_text()
    return text

# Function to set the voice (male or female) and speed
def set_voice(gender='male', rate=200):
    voices = engine.getProperty('voices') # Choose male or female
    if gender == 'male':
        engine.setProperty('voice', voices[0].id) # Usually the first voice is male
    else:
        engine.setProperty('voice', voices[1].id) # The second voice is usually female

# Set speech rate (speed)
engine.setProperty('rate', rate)

# Function to convert text to speech
def text_to_speech(text, gender='male', speed=1.0):
    # Set the voice and speed
    set_voice(gender=gender, rate=int(200 * speed)) # Default rate is 200, adjust by speed

    # Speak the text
    engine.say(text)

engine.runAndWait() # Example usage

if __name__ == '__main__':
    pdf_file_path = 'sample.pdf' # Path to your PDF file

    # Extract text from PDF
    extracted_text = extract_text_from_pdf(pdf_file_path)

    if extracted_text:
        print("Text extracted from PDF successfully.") # Convert the extracted text to speech
        text_to_speech(extracted_text, gender='female', speed=1.2) # Set desired gender and speed
```

## Frontend Code:(HTML, CSS)

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <meta http-equiv="X-UA-Compatible" content="ie=edge">
  <title>Accessible Audiobook Converter</title>
  <link rel="stylesheet" href="styles.css">
</head>
<body>
  <div class="container">
    <h1 id="heading">Accessible Audiobook Converter</h1>

    <!-- File Upload for PDF -->
    <label for="fileInput" class="visually-hidden">Upload PDF File:</label>
    <input type="file" id="fileInput" accept="application/pdf" aria-labelledby="heading" />

    <!-- Display PDF text after upload -->
    <textarea id="text" rows="10" aria-labelledby="heading" placeholder="Uploaded PDF text will appear here..." readonly></textarea>

    <!-- Voice Selection -->
    <div class="button-group">
      <h3 id="gender-selection">Select Voice Gender:</h3>
      <button id="maleVoice" class="voice-button" aria-pressed="false" aria-labelledby="genderselection">Male</button>
      <button id="femaleVoice" class="voice-button" aria-pressed="false" aria-labelledby="genderselection">Female</button>
    </div>

    <!-- Speed Adjustment -->
    <div class="button-group">
      <h3 id="speed-adjustment">Adjust Speed:</h3>
      <button id="decreaseSpeed" class="speed-button" aria-labelledby="speed-adjustment">-</button>
      <span id="speedDisplay" aria-live="polite">1.0x</span>
      <button id="increaseSpeed" class="speed-button" aria-labelledby="speed-adjustment">+</button>
    </div>

    <!-- Play button -->
    <button id="playButton" class="play-button" aria-labelledby="heading">Play Audio</button>
    <p id="errorMessage" class="error" aria-live="assertive"></p>
  </div>

  <!-- PDF.js for PDF Text Extraction -->
  <script src="https://cdnjs.cloudflare.com/ajax/libs/pdf.js/2.10.377/pdf.min.js"></script>
  <script src="script.js"></script>
</body>
</html>
```

```

const maleVoiceButton = document.getElementById('maleVoice'); const
femaleVoiceButton = document.getElementById('femaleVoice'); const
decreaseSpeedButton = document.getElementById('decreaseSpeed'); const
increaseSpeedButton = document.getElementById('increaseSpeed'); const
speedDisplay = document.getElementById('speedDisplay'); const
playButton = document.getElementById('playButton'); const textInput =
document.getElementById('text'); const errorMessage =
document.getElementById('errorMessage'); const fileInput =
document.getElementById('fileInput');

let selectedVoiceGender = 'male';
let speed = 1.0;
let voices = [];

// Load available voices and ensure they are ready before using them
function loadVoices() { return new Promise((resolve, reject) => {
  const synth = window.speechSynthesis;
  const id = setInterval(() => {
    voices = synth.getVoices();      if
    (voices.length > 0) {
      clearInterval(id);
      console.log('Voices loaded:', voices); // DEBUGGING: Log the voices
      resolve(voices);
    }
  }, 10);      setTimeout(()
=> {      if (voices.length
=== 0) {
    reject('No voices loaded');
  }
  }, 1000);
});
}

// Cancel any existing speech function
cancelSpeech() {  if
(window.speechSynthesis.speaking) {
  window.speechSynthesis.cancel();
  console.log('Previous speech cancelled.');
```



```
        // Extract text from each page
for (let i = 1; i <= pdf.numPages; i++) {
  const page = await pdf.getPage(i);
  const text = await page.getTextContent();
  text.items.forEach(item => {
    textContent += item.str + ' ';
  });
}

        // Display extracted text in the textarea
textInput.value = textContent;
    } catch (error) {
      errorMessage.textContent = 'Error reading PDF. Please try a different file.';
    }
  };

  fileReader.readAsArrayBuffer(file);
}
});

// Handle voice selection
maleVoiceButton.addEventListener('click', () => {
  selectedVoiceGender = 'male';
  updateVoiceSelection(maleVoiceButton, femaleVoiceButton);
});

femaleVoiceButton.addEventListener('click', () => {
  selectedVoiceGender = 'female';
  updateVoiceSelection(femaleVoiceButton, maleVoiceButton);
});

// Update the aria-pressed attribute and background color for voice buttons function
updateVoiceSelection(selectedButton, otherButton) {
  selectedButton.setAttribute('aria-pressed', 'true');  otherButton.setAttribute('aria-pressed', 'false');  selectedButton.style.backgroundColor = '#218838';
  otherButton.style.backgroundColor = '#007bff';
}

// Handle speed adjustment
decreaseSpeedButton.addEventListener('click', () => {
  if (speed > 0.5) {    speed -= 0.1;
    speed = Math.round(speed * 10) / 10;
    speedDisplay.textContent = `${speed}x;
  }
});

increaseSpeedButton.addEventListener('click', () => {
  if (speed < 2.0) {    speed += 0.1;    speed =
  Math.round(speed * 10) / 10;
    speedDisplay.textContent = `${speed}x;
```

```
    }  
  });  
  
  // Play the audio with selected settings playButton.addEventListener('click',  
  async () => {    const text = textInput.value;  
  
    if (!text) {  
      errorMessage.textContent = "Please enter some text or upload a PDF.";  
      return;  
    }  
  
    errorMessage.textContent = ""; // Clear previous error  
  
    // Cancel any ongoing speech  
    cancelSpeech();  
  
    // Ensure voices are loaded before speaking  
    try {  
      await loadVoices();  
    } catch (error) {  
      errorMessage.textContent = 'Failed to load voices. Please refresh the page.';  
      return;  
    }  
  
    const utterance = new SpeechSynthesisUtterance(text);  
    utterance.rate = speed;  
  
    // DEBUGGING: Log available voices and check for male/female voice  
    console.log('Available voices:', voices);  
  
    // Select appropriate voice based on gender    let selectedVoice =  
    voices.find(voice =>      selectedVoiceGender === 'male' ?  
    voice.name.toLowerCase().includes('male') :  
    voice.name.toLowerCase().includes('female')  
    );  
  
    if (!selectedVoice) {  
      errorMessage.textContent = "No suitable male/female voice found, using the default voice.";  
      selectedVoice = voices[0]; // Fallback to default voice  
    } else {      console.log('Selected voice:  
    ${selectedVoice.name});  
    }  
  
    utterance.voice = selectedVoice;  
  
    // Event listeners for speech feedback  
    utterance.onstart = function() {  
      console.log('Speech started.');    };  
  
    utterance.onend = function() {
```

```
        console.log('Speech ended.');
```

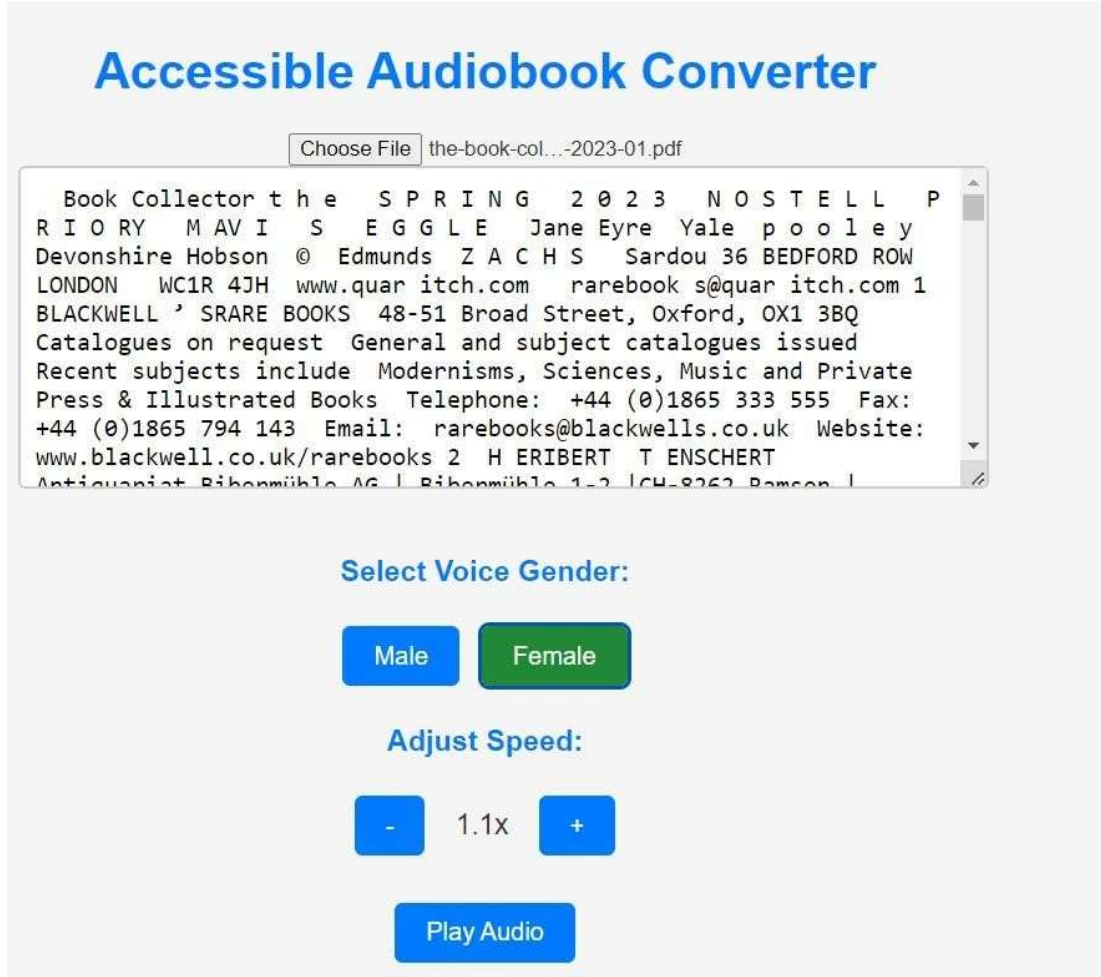
```
    };

    // Speak the text
    window.speechSynthesis.speak(utterance);
  });

body {  font-family: Arial,
sans-serif;  background-
color: #f5f5f5;  color: #333;
padding: 20px; } .container {
max-width: 600px;  margin:
0 auto;  text-align: center; }
h1, h3 {  color: #007bff; }
textarea {  width: 100%;
padding: 10px;  margin-
bottom: 20px;  font-size:
16px;  border: 2px solid
#ccc;  border-radius: 5px; }
button {  padding: 10px
20px;  margin: 5px;  font-
size: 16px;  cursor: pointer;
border: none;  border-radius:
5px;  background-color:
#007bff;  color: white; }
button:focus {
    outline: 3px solid #0056b3;
} button[aria-pressed="true"] {
background-color: #218838;
} button.voice-button:hover, button.speed-button:hover, button.play-button:hover
{  background-color: #218838;
}
```

```
.button-group {  margin-  
bottom: 20px;  
}  
#speedDisplay {  font-  
size: 18px;  margin: 0  
10px;  
}  
.visually-hidden {  
position: absolute;  
width: 1px;  height:  
1px;  padding: 0;  
margin: -1px;  
overflow: hidden;  
clip: rect(0, 0, 0, 0);  
border: 0; } .error {  
color: red;  margin-  
top: 10px;  font-  
size: 16px;  
}
```

## OUTPUT:



The screenshot displays the 'Accessible Audiobook Converter' web application. At the top, the title is in large blue font. Below it is a file selection area with a 'Choose File' button and a text input showing 'the-book-col...-2023-01.pdf'. A text area below contains a sample text block, which is a book collector's list. Below the text area are two buttons for 'Male' and 'Female' voice selection. Further down is a speed adjustment section with a '1.1x' label and minus/plus buttons. At the bottom is a large blue 'Play Audio' button.

### Accessible Audiobook Converter

Choose File the-book-col...-2023-01.pdf

Book Collector t h e   S P R I N G   2 0 2 3   N O S T E L L   P  
R I O R Y   M A V I   S   E G G L E   Jane Eyre Yale p o o l e y  
Devonshire Hobson © Edmunds Z A C H S   Sardou 36 BEDFORD ROW  
LONDON WC1R 4JH www.quar itch.com   rarebook s@quar itch.com 1  
BLACKWELL ' SRARE BOOKS 48-51 Broad Street, Oxford, OX1 3BQ  
Catalogues on request General and subject catalogues issued  
Recent subjects include Modernisms, Sciences, Music and Private  
Press & Illustrated Books Telephone: +44 (0)1865 333 555 Fax:  
+44 (0)1865 794 143 Email: rarebooks@blackwells.co.uk Website:  
www.blackwell.co.uk/rarebooks 2 H ERIBERT T ENSCHERT  
Antiquariat Ribenmühle AG L Ribenmühle 1-2 LCH-8262 Bamson L

Select Voice Gender:

Male Female

Adjust Speed:

- 1.1x +

Play Audio

## CONCLUSION:

The Accessible Audiobook Converter project aims to provide a seamless solution for converting written text into audiobooks, making literature accessible to a wider audience, including individuals with visual impairments or reading disabilities. This tool will simplify the process of converting text to audio, ensuring inclusivity and ease of access. Future enhancements include supporting a broader range of text formats, offering multiple voice options for a more personalized experience, and optimizing the conversion speed.

# **Accessible Audiobook Converter**

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**Ashmitha GA (92132223020)**



# Abstract

- This project develops an Accessible Audiobook Converter that converts text into audio, helping users with visual impairments and reading disabilities.
- It features customizable text-to-speech options, bookmarking, and easy navigation, promoting inclusivity in accessing literature and educational content.
- The user-friendly interface complies with accessibility standards, promoting inclusivity and expanding access to literature for all users.

# Introduction

- An Accessible Audiobook Converter addresses these challenges by converting written text into audio, utilizing advanced text-to-speech technology to create an engaging listening experience.
- This tool not only enhances accessibility but also fosters inclusivity, ensuring that everyone can benefit from the joys of reading, regardless of their abilities.
- This tool enhances accessibility by allowing users to listen to content rather than read it, thus accommodating various learning preferences and styles.



# Challenges

- Handling various text formats (PDFs, eBooks, etc.) can lead to inconsistent quality and formatting issues in conversion.
- Ensuring accurate pronunciation, intonation, and context in text-to-speech output can be technically complex
- Providing a range of voice options and adjustments (speed, pitch) that meet diverse user preferences while maintaining clarity.
- Ensuring the tool meets relevant accessibility standards and guidelines to serve users effectively.

# Technical Tools

- User Interface : Tools like Tkinter can be used to create a more user-friendly experience.
- `filedialog` : Part of the Tkinter library, `filedialog` provides methods to create file selection dialogs.
- `gTTS` (Google Text-to-Speech): `gTTS` is a Python library that interfaces with the Google Text-to-Speech API to convert text into spoken audio
- Error Handling: Catches and handles exceptions during file operations or TTS conversion, providing user-friendly error messages

# Proposed Model

- Analyzes text to improve pronunciation and intonation through context-aware algorithms.
- Breaks down text into manageable segments (chapters, paragraphs) for efficient audio generation.
- Features include file upload options, playback controls, bookmarks, and navigation tools.
- Converts processed text into audio files (e.g., MP3, WAV) and saves them in a user-defined location.

# Implementation

```
from tkinter import filedialog, messagebox
from gtts import gTTS

def convert():
    text_file = filedialog.askopenfilename(title="Select Text File", filetypes=[("Text Files", "*.txt")])
    if not text_file:
        return

    output_audio = filedialog.asksaveasfilename(defaultextension=".mp3", title="Save Audio File", filetypes=[("MP3 Files", "*.mp3")])
    if not output_audio:
        return

    try:
        with open(text_file, 'r', encoding='utf-8') as file:
            text = file.read()

            tts = gTTS(text=text, lang='en')
            tts.save(output_audio)
            messagebox.showinfo("Success", f"Audio saved as {output_audio}")
    except Exception as e:
        messagebox.showerror("Error", f"An error occurred: {e}")

app = tk.Tk()
app.title("Audiobook Converter")

convert_button = tk.Button(app, text="Convert Text to Audio", command=convert)
convert_button.pack(pady=20)

app.mainloop()
```



# Demo

ACCESSIBLE AUDIOBOOK CONVERTER  
92132223011  
92132223016  
92132223020

## Accessible Audiobook Converter

Choose File the-book-col...-2023-01.pdf

Book Collector the SPRING 2023 NOSTELL P  
RIO RY MAVI S EGGLE Jane Eyre Yale pool ey  
Devonshire Hobson @ Edmunds ZACHS Sardou 36 BEDFORD ROW  
LONDON WC1R 4JH www.quaritch.com rarebook s@quaritch.com 1  
BLACKWELL 'SRARE BOOKS 48-51 Broad Street, Oxford, OX1 3BQ  
Catalogues on request General and subject catalogues issued  
Recent subjects include Modernisms, Sciences, Music and Private  
Press & Illustrated Books Telephone: +44 (0)1865 333 555 Fax:  
+44 (0)1865 794 143 Email: rarebooks@blackwells.co.uk Website:  
www.blackwell.co.uk/rarebooks 2 HERIBERT T ENSCHERT  
Antiquariat Bibermühle AG Bibermühle 1-2 LGH-8262 Ramsen L

Select Voice Gender:

Male

Female

Adjust Speed:

-

1.1x

+

Play Audio

# Conclusion

- By converting text-based materials into audio formats, the project not only promotes inclusivity but also encourages a greater appreciation for literature.
- Future developments could focus on improving voice quality and expanding language support, further broadening the impact of this initiative.