ReadWiz (Text Summarizer & Paraphraser)

Submitted in partial fulfillment of the requirements of the degree

BACHELOR OF ENGINEERING IN

COMPUTER ENGINEERING

By

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(AY 2023 – 24)

CERTIFICATE

This is to certify that the Mini Project entitled **"ReadWiz (Text Summarizer & Paraphraser)"** is a bonafide work of **Nikhil Dhanwani (12 - D12B), Chirag Santwani (50 - D12B), Manraj Singh Virdi (66 - D12B)** 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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Mini Project Approval

This Mini Project entitled "ReadWiz (Text Summarizer & Paraphraser)" by **Nikhil Dhanwani (12), Chirag Santwani (50), Manraj Singh Virdi (66)** is approved for the degree of **Bachelor of Engineering** in **Computer Engineering.**

Examiners

1……
(Internal Examiner Name & Sign)

2……
(External Examiner name & Sign)

Date: 21st October 2023.

Place: CHEMBUR.

Contents

Abstract

In the fast-moving digital world, accessing the immense sea of information requires sophisticated tools for summarizing and paraphrasing. Here comes ReadWiz, a ground-breaking initiative that combines the strength of Language Models (LLMs) and the accuracy of Natural Language Processing (NLP). By providing a simple interface for users to input large papers or paragraphs, ReadWiz redefines the reading experience. It simplifies difficult information into brief overviews using sophisticated algorithms, promoting quick comprehension and knowledge gain.

ReadWiz goes beyond summary to redefine transfer of knowledge with the paraphrase skills. It can create several representations of the same information while keeping context and consistency by using modern LLM algorithms. The tool's flexibility and convenience are increased by users' easy uploading of PDF files. Accuracy, speed, and user-friendly interactions are all assured by the ReadWiz platform, which was created with Python and makes use of advanced libraries.

ReadWiz, with its capacity to summarize and paraphrase content, marks a significant advancement in information processing. It enables users to connect with information more meaningfully by breaking complex texts and providing a variety of views. ReadWiz transforms how we engage with textual material as a teaching resource, research assistant, or business tool by making understanding and interpretation simple.

Acknowledgement

We would like to thank everyone who helped us arrange our project effectively and convey our appreciation for their contributions.

We like to thank Dr. J. M. Nair, the principal of the V. E. S. Institute of Technology, for all of her encouragement and assistance.

First of all we would like to express our heartfelt gratitude to Mrs. Manisha Mathur, our esteemed mentor, whose unwavering support and insightful guidance have been instrumental in shaping our project. Her expertise and encouragement propelled us to explore new horizons, making this endeavor a profound learning experience.

We would also like to express our gratitude to Dr. Nupur Giri, the head of the computer engineering department at the V. E. S. Institute of Technology. Her commitment and support, which were crucial to the successful completion of our project, are greatly appreciated.

We would like to express our gratitude to Mrs. Priya R. L., the project coordinator, for her advice. Not only that, but she inspired us and boosted our faith in the whole execution process.

We also want to express our thanks to all the faculty members who have not only provided us with ongoing assistance but also motivated us to finish the allocated execution task on time.

Finally, we would like to thank our classmates for all of the help and information they have given us in order to complete our project successfully.

List of abbreviations

Sr no.	Short form	Abbreviated form
1	LLM	Large Language Model
2	AI	Artificial Intelligence
3	NLP	Natural Language Processing
4	PDF	Portable Document Format
5	LSTM	Long Short-Term Memory
6	VAE	Variational Autoencoder
7.	RNN	Recurrent Neural Network
8.	CNN	Convolutional Neural Network
9.	MBZUAI	Mohamed Bin Zayed University of Artificial Intelligence

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Chapter I: Introduction

1.1. Introduction

In the digital era, when overload of data is an ongoing struggle, efficient interpretation and usage of enormous textual material has become essential. This common problem is addressed by ReadWiz Text Summarizer and Paraphraser, which seeks to improve accessibility as well as understanding of large materials. Our project uses the strength of Language Learning Models (LLMs) and Artificial Intelligence (AI) algorithms to change the way humans interact with text in view of the rapid development of natural language processing technology.

The main goal of the project is to give people a quick way to extract important information from lengthy textual documents. The system uses complex algorithms to thoroughly evaluate the input text using cutting-edge LLMs. The Text Summarizer component condenses large papers into brief summaries, making sure that important facts are kept while filtering out unnecessary ones.

Additionally, the system's capabilities are improved by the paraphrasing function. A key component of improving readability and ensuring information is shared with greater numbers of people is the skill of paraphrasing, which involves rephrasing language while maintaining its original meaning. The Paraphraser feature of our project uses cutting-edge AI approaches to restructure phrases, improving readability and engagement without sacrificing accuracy. Additionally, the project's user-friendliness is a priority in its design. Users may easily type large paragraphs or upload PDF documents using a user-friendly online interface. The addition of Google Colab guarantees seamless accessibility and collaboration capacities, improving the user experience overall.

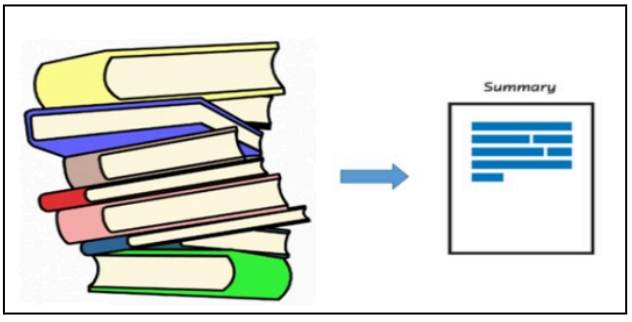

Figure 1.1: Summary

ReadWiz Text Summarizer and Paraphraser create the path for a future where usable, important, and brief information is easily accessible to everyone by diving into the worlds of LLM, AI, and NLP. In addition to being an important step forward in the field of language processing, this initiative demonstrates creativity and teamwork, helping to create a more connected and educated society.

1.2. Motivation

The motivation for creating ReadWiz Text Summarizer and Paraphraser comes from solving today's problems of accessibility and information overload. In today's fast-paced world, where we are constantly bombarded with massive amounts of text, the need for effective and efficient ways to absorb this information is crucial. Our motivation arises from a constant commitment to making access to knowledge easier. The goal of the project is to empower everyone, including students, professionals, and researchers, by giving them access to a tool that simplifies difficult material into formats that are clear and easy to grasp.

1.3. Problem Statement & Objectives

Processing and interpreting large amounts of text has become a huge difficulty in today's digital era, as a flood of information overflows every aspect of our life. This difficulty makes it difficult for people with different levels of literacy, professionals, researchers, and students in schools to acquire and understand critical information. Traditional reading and summarizing techniques take time, and extensive summaries may overlook details of the information. Furthermore, reading complicated materials might be difficult for those with low language skills. This information gap promotes social and educational inequality by creating obstacles to education, decision-making, and equitable access to knowledge.

Examples:

1. Imagine a high school kid attempting to comprehend the material of a protracted research report for a project. The excessive amount of knowledge results in irritation and hinders learning.
2. Professionals across various industries can benefit from ReadWiz when dealing with large volumes of textual information, such as reports, emails, and business documents.

3. Imagine a researcher reading a lot of scientific journals to find material that will be useful for a study. These publications take a lot of time to read and summarize, which considerably slows down the research process.

Key objectives:

1. Effective summarizing: Create an effective summarizing method that reduces long texts while preserving key ideas and details.
2. Improved Accessibility: Ensure that ReadWiz is flexible to users with all reading levels, making difficult materials understandable and available to researchers, professionals, and students alike.
3. Capability for Paraphrasing: Include paraphrasing capabilities to allow users to understand material from different views, improving the overall understanding.
4. User-Friendly Interface: Create an easy-to-use and user-friendly interface that will enable ReadWiz to be used by a variety of people, such as university students, researchers, and professionals from various fields.
5. Accuracy and Reliability: To ensure high-quality output, ReadWiz's summarization and paraphrasing algorithms are put through thorough testing and ongoing development.
6. Educational Impact: Evaluate and assess ReadWiz's educational impact in educational settings such as classrooms and universities in order to identify areas that need improvement.

1.4. Organization of the report

In this report, we further discuss the following points:

- **Chapter 2.1:** Literature survey of existing systems
- **Chapter 2.2:** Limitations of existing systems
- **Chapter 2.3:** Mini project contribution
- **Chapter 3.1:** The proposed system
- **Chapter 3.2:** Working of the project
- **Chapter 3.3:** Details of hardware and software used
- **Chapter 3.4:** Results
- **Chapter 3.5:** Performance analysis
- **Chapter 3.6:** Conclusion

Chapter II: Literature survey

2.1 Survey of existing systems:

Overview

- Many research papers delve into the development and evaluation of algorithms, including natural language processing and machine learning techniques, used for summarizing and paraphrasing text.
- These papers describe how various models, such as sequence-to-sequence models, reinforcement learning, and transformer-based architectures, are applied to capture the essence of text while reducing redundancy and maintaining readability.

Paper 1 - A Deep Generative Framework for Paraphrase Generation. [1]

- Authors: Ankush Gupta, Arvind Agrawal, Prawaan Singh, & Piyush Rai
- Methodology: The paper proposes a deep generative framework for paraphrase generation. It combines deep generative models (VAE) with sequence-to-sequence models (LSTM) to generate paraphrases given an input sentence. The models are trained using stochastic gradient descent with a fixed learning rate and dropout rate. The proposed method conditions both the encoder and decoder sides of the VAE on the original sentence to generate paraphrases.
- Advantages:
    - The proposed method outperforms state-of-the-art methods in terms of performance improvement, as demonstrated by quantitative evaluation on a benchmark paraphrase dataset.
    - The generated paraphrases are well-formed, grammatically correct, and relevant to the input sentence, as indicated by qualitative human evaluation.
- Disadvantages:
    - The model's performance is evaluated primarily based on automatic evaluation metrics, which may not capture all aspects.
    - The model's performance may vary depending on the dataset and the specific paraphrase generation task.

Paper 2 - Hybrid Algorithm to Generate Summary of Documents by Extracting Keyword. [2]

- Authors: Surbhi Patel, Devanshi Parikh, & Hiren Joshi
- Methodology: The paper presents a hybrid algorithm for generating summaries of documents by extracting keywords. The algorithm follows a step-by-step process that includes identifying the number of pages, performing N-gram analysis, removing stop words, applying stemming, and measuring word similarity using WordNet. The results are then displayed.
- Advantages:
    - The automatic keyword extraction enables the identification of key words, phrases, or segments that describe the meaning of the document.
    - The proposed algorithm combines multiple methods and algorithms, such as Text Rank, RAKE, and TAKE, to achieve higher recall and f-measure compared to individual extractors.
    - The hybrid approach of the algorithm, which includes text mining techniques, strengthens the summarization process and improves the overall results.
- Disadvantages:
    - Manual assignment of quality keywords is time-consuming and expensive.
    - The precision and recall of the analyzed document counts may vary due to the frequency of keywords across documents.
    - The proposed research shows an improvement of approximately 10 to 12% compared to previous approaches, but there is still room for further enhancement.

Paper 3 - TEXTLYTIC: Automatic Project Report Summarization using NLP Techniques. [3]

- Authors: Riya Menon, Namrata Tolani, Gauravi Tolamatti, Akansha Ahuja, Priya R. L.
- Methodology: The paper proposes a methodology for automatic project report summarization using NLP techniques. The approach involves preprocessing the document, splitting it into sections, and summarizing each section. The

methodology uses PyPDF2 and Camelot libraries for document processing, word2vec for extractive summarization, and K-means clustering for grouping word vectors. The resulting summary is generated by combining the summaries and figures/diagrams of each section. The system also provides a user-friendly web application interface for convenience.

- Advantages: The proposed methodology offers several advantages. It retains the important points under respective headings, ensuring the inclusion of all useful information. It allows for the extraction of precise inferences by avoiding the accidental exclusion of any relevant details. The system is capable of generating relevant summaries and provides the option to download the summary as a PDF document.
- Disadvantages: One disadvantage of the proposed methodology is that it requires a strong hardware configuration for training the dataset, particularly for abstractive text summarization using recurrent neural networks (RNN). Abstractive summaries generated by RNN models may contain grammatical and syntactic errors, making them unsuitable for practical use. Additionally, the system relies on the proper tabulation and indexing of figures and diagrams for their extraction and inclusion in the summary.

Paper 4 - Benchmarking Large Language Models for News Summarization. [4]

- Authors: TianyiZhang, Faisal Ladhak, EsinDurmus, PercyLiang, Kathleen McKeown, Tatsunori B. Hashimoto.
- Methodology: The paper conducted a comprehensive human evaluation of ten Language Model-based Summarization Systems (LLMs) using two popular news summarization benchmarks, CNN/DM and XSUM. The evaluation involved comparing the LLM-generated summaries with summaries written by freelance writers. The annotators were asked to rate the overall preference of the summaries and compare the number of facts in each summary. The paper also explored the impact of reference summaries on evaluation metrics.
- Advantages
    - The evaluation provided insights into the performance of LLMs in news summarization and highlighted the importance of instruction tuning.

    - The study addressed the limitations of existing benchmarks and proposed improvements to enhance LLM evaluation.
    - The paper demonstrated the potential of LLMs to perform on par with summaries written by freelance writers.
- Disadvantages
    - The quality of reference summaries in the benchmarks was found to be a limitation, affecting the performance of automated metrics.
    - There was a significant amount of individual variation among annotators, indicating the subjective nature of summarization evaluation.
    - The study focused on single-document news summarization and may not capture the full range of summarization tasks.

2.2 Limitations of existing system

- Context Sensitivity

  Current text summarization techniques frequently have trouble understanding the context in which a text was created. Due to this restriction, summaries may not accurately convey the original text's complex meaning, particularly when it contains idiomatic idioms or sarcasm. [1]

- Handling Long and complicated Sentences or Paragraphs

  Current summarizing methods struggle with long and complicated sentences or paragraphs in texts. They frequently miss crucial details inside complex systems, resulting in summaries that are either lacking or ambiguous.

- Handling Non-Standard Language or Abbreviations

  For the most part, summarizers struggle with non-standard language, acronyms, and lingo that are frequently found in social media and industry-specific literature. Existing methods frequently struggle to understand these non-standard components, producing summaries that are superficial and inaccurate. [2]

- Semantic understanding

  Thorough knowledge of semantics is essential for summarization. Existing methods frequently struggle to understand the underlying semantics, producing summaries that lack depth and miss the text's essential meaning.

- Integration of capabilities

  There is no all-encompassing software that combines text summarizing with other crucial capabilities like paraphrasing, text-to-speech, or definition searches. The constant switching between tools by users ruins their workflow and user experience. [5]

- Lack of Free and Open-Source Solutions

  The absence of Free and Excellent Summarization Tools is a significant constraint. While there are some commercial solutions, there is noticeably a lack of comprehensive, free, and open-source software that addresses all in one.

2.3 Mini project contribution

The ReadWiz project promises to be a significant asset for individuals in both their daily lives and professions. This contribution extends to several crucial aspects, including:

1. Enhanced Accessibility: ReadWiz empowers people with disabilities by removing obstacles to communication and opening information to the deaf and hard of hearing, promoting inclusion in a variety of aspects of life.
2. Support for Education: ReadWiz helps students by offering succinct, clear summaries that improve learning. It's a useful tool that helps students and teachers alike better comprehend difficult subjects.
3. Effective Research: By swiftly capturing the substance of long papers, researchers and professionals may digest information more quickly and more effectively, saving time.
4. Business Communication: ReadWiz is helpful in business situations by facilitating clear and succinct communication, ensuring that crucial information is transmitted efficiently in a shorter amount of time.
5. Podcast transcripts: By reading shorter versions of the transcripts, listeners can gain insightful knowledge without spending the time to listening to the complete program.

Chapter III: Proposed system

3.1 Introduction

The goal of ReadWiz, our innovative project, is to revolutionize how people read, absorb, and use textual information. It stands at the intersection of language and technology. It makes use of sophisticated AI algorithms to offer services for dynamic text summary and paraphrasing. ReadWiz simplifies complicated texts for researchers, professionals, and students to promote effective learning and comprehension. By distilling long content into easily readable summaries, ReadWiz serves as a beacon in a world overflowing with knowledge, leading users across the sea of words. Its user-friendly design guarantees accessibility, making it a vital tool for a range of consumers. ReadWiz aims to revolutionize how we interact with written text by supporting clear communication and improving understanding, leading to a more knowledgeable and interconnected global society.

It helps students understand complicated subjects and encourages professionals in remaining informed by compressing dense materials. The integrated text-to-speech capability offers accessibility for those with visual impairments. In order to make information understandable, ReadWiz adapts to the settings of corporations, research centers, and educational institutions. This project seeks to improve the daily lives of users by streamlining learning, fostering diversity, and facilitating seamless communication.

3.2 Architectural framework / Conceptual design

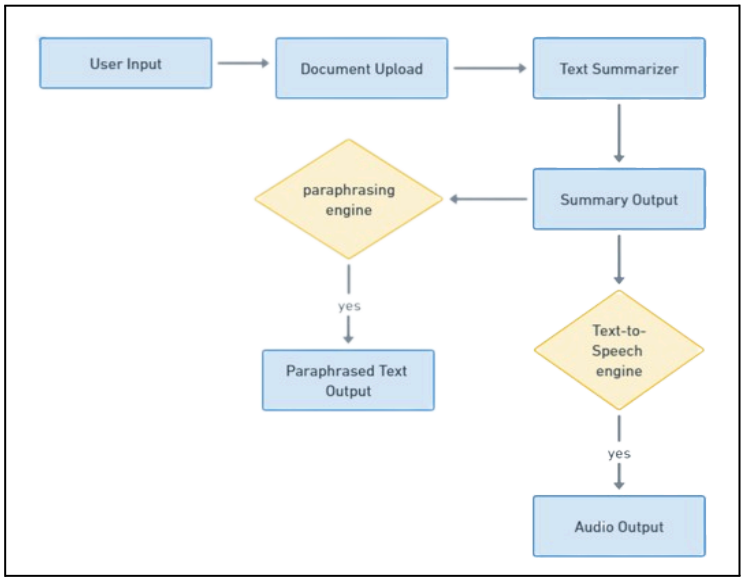

Figure 3.1: Block Diagram of ReadWiz

- User Input: This block serves as the entry point, allowing users to input text manually. It's the interface where users provide the content they want to summarize or process further.

- Document Upload/Input Paragraph: Here, users can either upload documents or input a paragraph directly. This block acts as the source of the content to be summarized and processed, forming the core input data for the system.

- Text Summarizer Output: After processing the input, this block generates a concise summary of the text. It condenses the information while retaining key points, making it easier for users to grasp the main ideas of the document.

- Paraphrasing Engine Output: This block rephrases the summarized text, providing an alternative version of the content. It's valuable for users who require varied ways of expressing the same information, enhancing the versatility of the system's output.

- Text-to-Speech Output: Transforming text into audio, this block converts the summarized and paraphrased content into spoken words. It ensures accessibility for visually impaired users or those who prefer auditory information, broadening the system's usability.

3.3 Algorithm and process design

Algorithms and Libraries:

- MBZUAI/LaMini-Flan-T5-248M Model: We harnessed the power of the MBZUAI/LaMini-Flan-T5-248M model, a cutting-edge text summarization and paraphrasing algorithm. LaMini-Flan-T5-248M is based on Transformer architecture, an advanced deep learning model known for its exceptional performance in natural language processing tasks. Transformers leverage attention mechanisms to capture intricate patterns in textual data, making them ideal for tasks like summarization and paraphrasing. This model was pivotal in our project, enabling us to generate accurate and coherent summaries from input texts.
- Langchain: In our project, we utilized Langchain, a versatile text processing library. Langchain provided robust functionalities for tasks such as text splitting and document loading. Its capabilities allowed us to seamlessly preprocess the

input text, ensuring that the data fed into our summarization model was properly formatted and optimized for processing.

- Transformers: Pipeline and Tokenizers: Transformers, a powerful library for natural language processing, played a central role in our project. We leveraged the Transformers library to access essential components like pipelines and tokenizers. The pipeline module streamlined the implementation of complex tasks, such as summarization.

  By utilizing pre-trained transformer models, we significantly reduced the development time and computational resources required for our project. Additionally, transformers' tokenizers enabled efficient text tokenization, breaking down the input text into meaningful units for the model to process accurately. These components were instrumental in enhancing the overall efficiency and accuracy of our text summarization and paraphrasing system.
- The following is a pipeline for text summarization using MBZUAI/LaMini-Flan-T5-248M and langchain:
  - Tokenize the input text: The input text is tokenized into a sequence of tokens. This can be done using a tokenizer such as the one provided by Hugging Face.
  - Encode the input text: The input tokens are encoded into a hidden representation using the MBZUAI/LaMini-Flan-T5-248M model.
  - Decode the hidden representation: The hidden representation is decoded into a summary of the input text using the MBZUAI/LaMini-Flan-T5-248M model.
  - Post-process the summary: The summary can be post-processed to improve its readability and fluency. This can be done using a variety of techniques, such as sentence splitting and detokenization.

Process Design:

- Data Collection and Preparation:
  - Text and PDF Corpus: Compiled a diverse dataset of textual documents and PDF files, encompassing various topics and styles to ensure comprehensive coverage.
  - Data Annotation: Annotated the dataset to enhance its quality, ensuring

accurate training and evaluation of the text summarization and paraphrasing model.

- Model Selection and Training:
  - Algorithm Choice: Utilized the state-of-the-art MBZUAI/LaMini-Flan-T5-248M model, renowned for its proficiency in text summarization and paraphrasing tasks.
  - Fine-tuning: Fine-tuned the model on our annotated dataset, optimizing its ability to comprehend and summarize a wide array of textual content effectively.
- Real-time Text Summarization and Paraphrasing:
  - Integration of LaMini-Flan-T5-248M: Integrated the trained LaMini-Flan-T5-248M model into our application, enabling real-time text summarization and paraphrasing.
  - User Input Processing: Processed user-provided text or uploaded PDF files, preparing them for the summarization model.
- Natural Language Processing (NLP) Integration:
  - Predictive Text Conversion: Converted predicted text from LaMini-Flan-T5-248M into coherent sentences, employing advanced NLP techniques to ensure grammatical accuracy and context-based interpretation.
  - Semantic Understanding: Implemented semantic analysis to capture nuanced meanings, ensuring the generated summaries and paraphrased content conveyed the intended context effectively.
- User Experience Enhancement:
  - Text-to-Speech Conversion (TTS): Implemented a robust TTS engine, enabling the synthesized textual output to be transformed into audible speech.
  - Personalization: Offers users the choice of voices and accents, tailoring the auditory experience to individual preferences and enhancing user engagement.
- Quality Assurance and Iterative Enhancement:
  - Implemented a robust user feedback loop and continuous monitoring mechanisms to enhance summarization and paraphrasing algorithms, ensuring accuracy, relevance, and optimal user experience.

3.4 Methodology applied

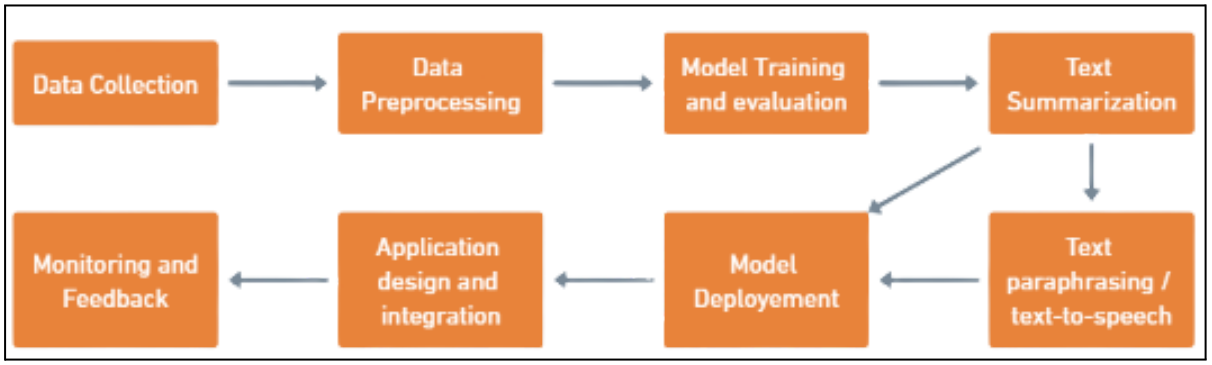

Figure 3.2: Methodology Diagram

- Data Collection:

  This step involves gathering raw textual data from various sources such as documents, articles, or online content. Data collection ensures we have a diverse and comprehensive dataset to train and evaluate your models effectively. Large Language Models (LLMs) like those provided by OpenAI or Hugging Face can assist in data collection by generating synthetic text data for training purposes. Hugging Face's Transformers library simplifies the process of accessing and working with pre-trained LLMs.

- Data Processing:

  Raw data often needs preprocessing, which includes tasks like tokenization, cleaning, and structuring the data into a format suitable for model training. This step ensures the data is consistent and ready for further processing.

- Model Training and Evaluation:

  In this phase, machine learning models, including LLMs, are trained on the preprocessed data. Continuous training and evolution involve refining the model based on its performance and incorporating new data to enhance accuracy and relevance.

- Text Summarization:

  Summarization algorithms process textual content to generate concise and coherent summaries, capturing the key points of the original text while preserving its meaning. LLMs can be fine-tuned specifically for summarization tasks. By utilizing Hugging Face's Transformers library, we have streamline this process and experiment with various pre-trained models for optimal summarization results.

- Text Paraphrasing / Text-to-Speech:

  Paraphrasing involves rephrasing text while retaining its original meaning. Text-to-Summarizer translates paraphrased text back into a summarized format, ensuring the essence of the information is preserved. LLMs excel at paraphrasing tasks due to their understanding of context and language nuances. By integrating the models via Hugging Face, we have the chance to create robust paraphrasing and text-to-summarizer components in your system.

- Model Deployment:

  Trained models are deployed to production environments, making them accessible for users to interact with. Deployment ensures the models are operational, scalable, and can handle real-time requests.

- Application Design and Integration:

  The user interface and user experience (UI/UX) are designed to integrate the summarization and paraphrasing functionalities seamlessly. This step ensures the application is user-friendly and intuitive.

- Monitoring:

  Monitoring involves tracking the system's performance, including summarization and paraphrasing accuracy, response times, and user interactions. Continuous monitoring ensures the application operates effectively and identifies areas for improvement.

3.5 Hardware and software specifications

Hardware Requirements:

- Processor: Multi-core processor (2.5 GHz or higher).
- RAM: Minimum 4 GB RAM.
- Storage: Sufficient storage capacity is required to accommodate the application code, NLP models, datasets, and any user data. (preferably SSD).
- Network Connectivity: Internet connection.
- Audio Output Devices: To enable users to listen to text-to-speech outputs.

Software Requirements:

- Operating System: Windows 7 or higher or macOS
- Programming Language: Python 3.8
- Integrated Development Environment (IDE): Any text editor such as Visual Studio Code, PyCharm, etc.
- Python Libraries:
  - PyQt5
  - gTTS (Google Text-to-Speech) or pyttsx3

3.6 Experiment and Results

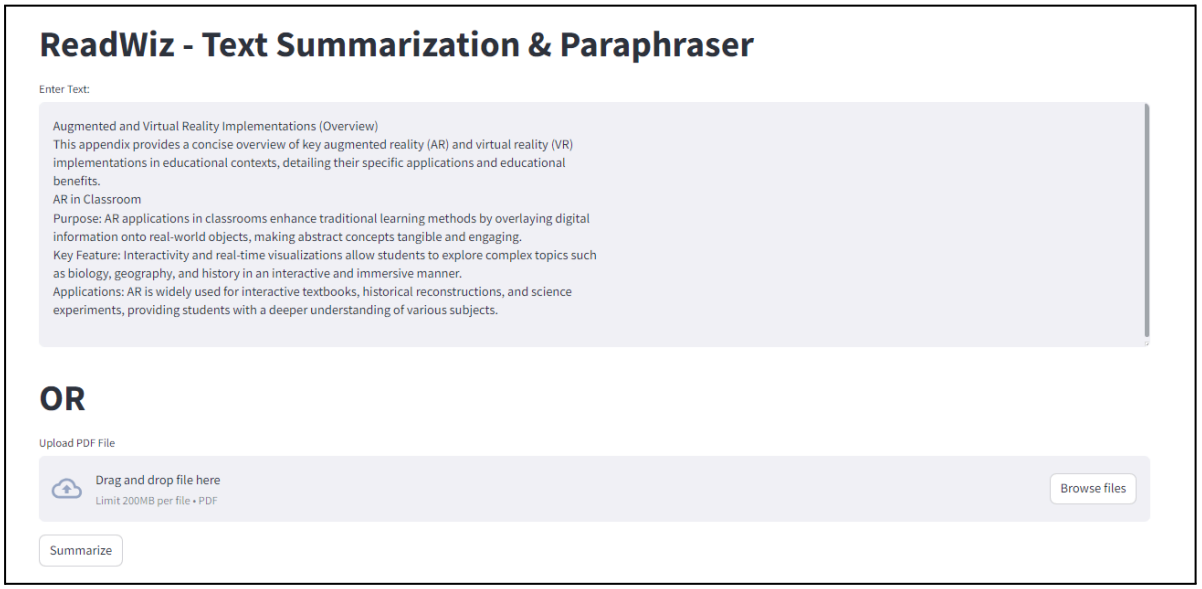

Figure 3.3: User text input box

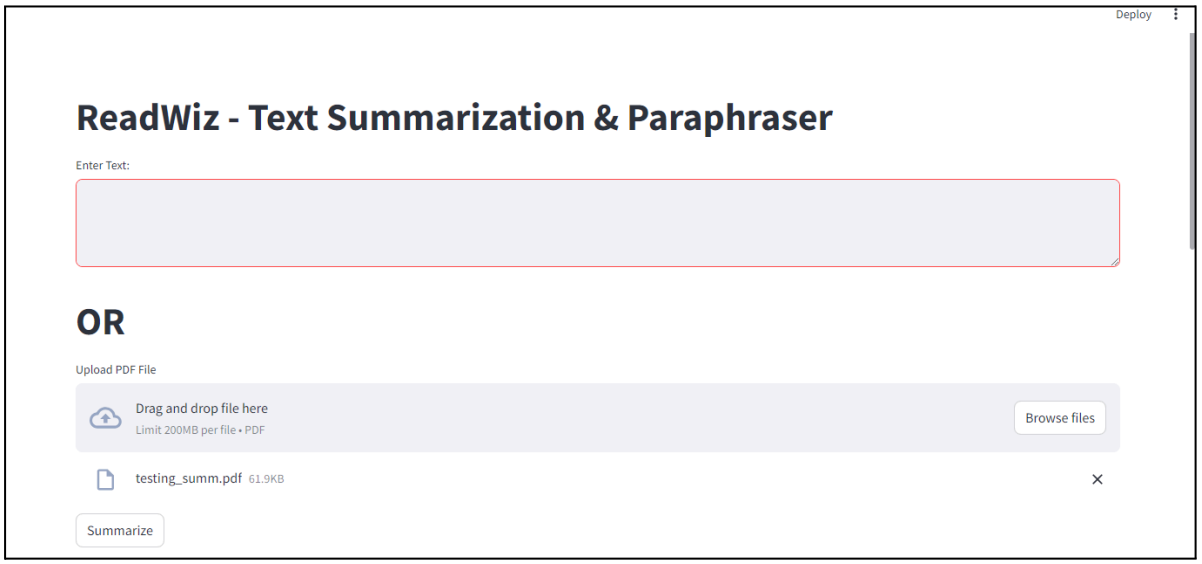

Figure 3.4: Upload PDF document

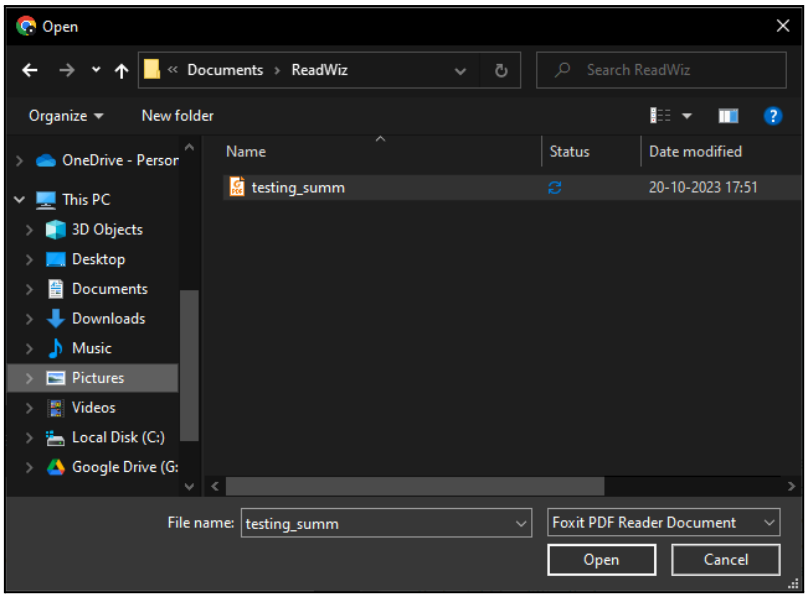

Figure 3.5: Select the PDF document

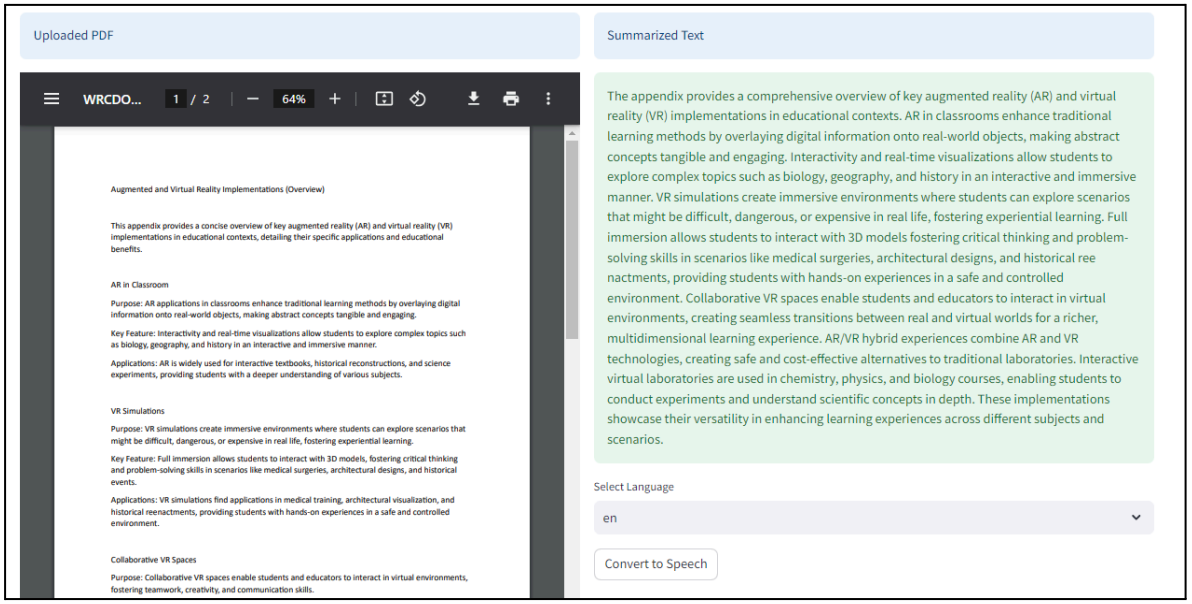

Figure 3.6: Summary of PDF document

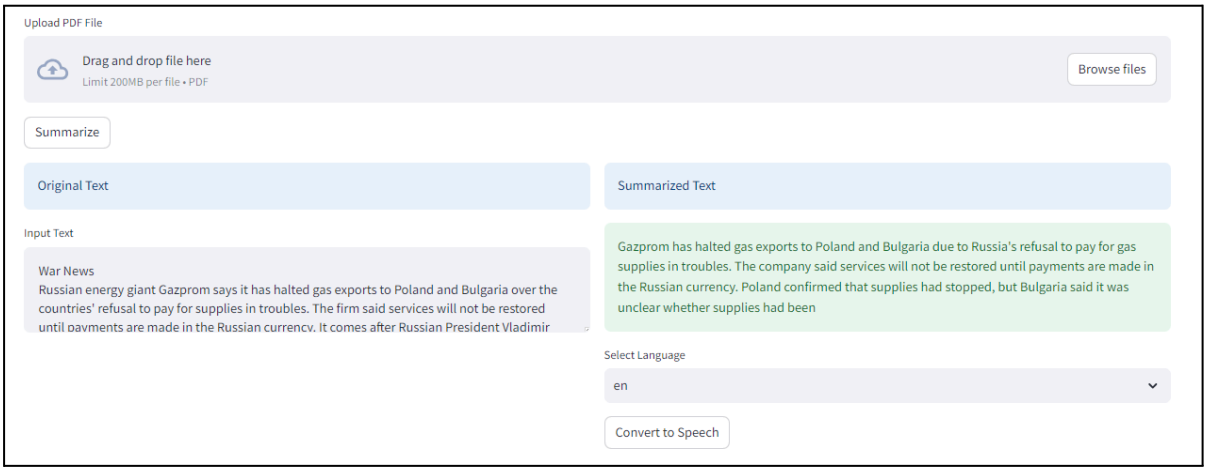

Figure 3.7: Summary of the input text

3.7 Result analysis and discussion

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This overview highlights diverse implementations of AR and VR technologies in education,
showcasing their versatility in enhancing learning experiences across different subjects and
scenarios.

Summary:
Key Feature: Full immersion allows students to interact with 3D models, fostering critical thinking
and problem-solving skills in scenarios like medical surgeries, architectural designs, and historical
events.
 Applications: VR simulations find applications in medical training, architectural visualization, and
historical reenactments, providing students with hands-on experiences in a safe and controlled
environment.
 Key Feature: Interactivity and real-time visualizations allow students to explore complex topics such
as biology, geography, and history in an interactive and immersive manner.
```

Figure 3.8: Comparing to previous model

In the past, our project was working fully CLI based, making it a bit tricky for people to use. However, now we've created a new interface that you can access directly from your web browser, so there's no need to type confusing commands anymore.

Not only that, but we've also made the project smarter. Before, it would just guess some parts of the text and sometimes get it wrong. But now, using advanced techniques like LLM, it carefully selects the important bits of information and gives you a much better summary. You can even hear the summary in a natural voice, making it feel like someone is explaining the content to you. With this new interface, users can upload PDF files, and our system will summarize it for you. We're still working on making it even faster, but we're pretty excited about how much better and user-friendly it has become!

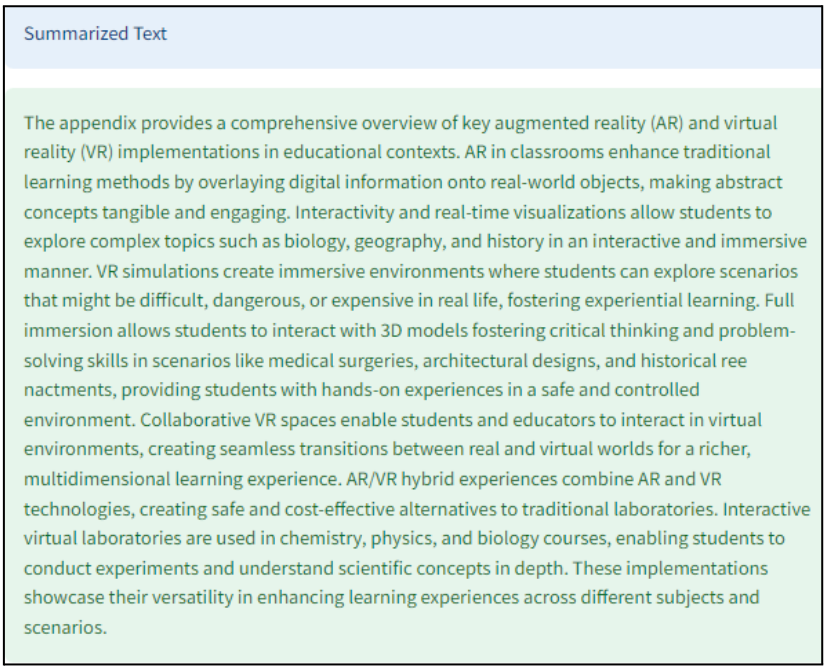

Figure 3.9: Analyzing the Summary

3.8 Conclusion and future work

In this study, we showcase the potential of ReadWiz, an innovative text processing system powered by cutting-edge Large Language Models (LLMs). We tested ReadWiz's complexities through rigorous testing, revealing its capacity to understand a variety of languages, contextual complexity, and intricate structures. We uncover the revolutionary effects ReadWiz can have on these industries by looking at a variety of use scenarios, from professional research to teaching. We have demonstrated the system's capacity to bridge the gap between complex textual material and understandable, brief overviews through in-depth investigation and experimentation.

We get insights into how ReadWiz simplifies complex subjects, enables inclusive education, and speeds comprehension through rigorous study. We analyze its adaptability, displaying its mastery of summarizing and paraphrasing, providing priceless assistance to students, researchers, and professionals everywhere. This research throws light on ReadWiz's unique position at the intersection of cutting-edge technology and practical applications, which holds up the prospect of a time when information is not merely processed but also deeply comprehended and made available to everyone.

Future Goals

1. Increasing Multimedia Support: By giving ReadWiz the ability to manage multimedia content, such as accurately captioning YouTube videos and summarizing them, ReadWiz will be more accessible to a wider range of users.
2. Improved Graphical User Interface (GUI): Investing in an interface that is user-friendly and will provide easy navigation and improve user experience.
3. Integration of Domain-Specific Models: To meet the particular needs of diverse sectors, domain-specific summarization models are developed. This ensures extremely accurate and specialized summaries.
4. Advanced Text-to-Speech Integration: Integrating innovative text-to-speech technology for more realistic and expressive audio output, especially to users with visual impairments or those who prefer learning through sound.
5. User Feedback Mechanism: Implementing a strong feedback system to collect user comments and ideas, allowing for continual development depending on user needs and preferences.

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Chapter IV: Annexure

4.1 Review I sheet

Industry / Inhouse:
Research / Innovation:

Project Evaluation Sheet 2023-24

Class: D12 B

Title of Project (Group no): Readwiz (Text Summarize & Paraphrasing) GroupNo: 51

Group Members: Nikhil Dhanwani (42), Chirag Santwani (50), Manraj Singh Virdi (66)

	Engineering Concepts & Knowledge (5)	Interpretation of Problem & Analysis (5)	Design / Prototype (5)	Interpretation of Data & Dataset (3)	Modern Tool Usage (5)	Societal Benefit, Safety Consideration (2)	Environment Friendly (2)	Ethics (2)	Team work (2)	Presentation Skills (3)	Applied Engg & Mgmt principles (3)	Life-long learning (3)	Professional Skills (5)	Innovative Approach (5)	Total Marks (50)
Review of Project Stage 1	04	03	03	02	04	02	02	02	02	03	03	03	04	04	42

Comments: Minimize the scope, GO for particular type of document, problem statt is generalize, need to reframe, same for methodology.

Name & Signature Reviewer1

	Engineering Concepts & Knowledge (5)	Interpretation of Problem & Analysis (5)	Design / Prototype (5)	Interpretation of Data & Dataset (3)	Modern Tool Usage (5)	Societal Benefit, Safety Consideration (2)	Environment Friendly (2)	Ethics (2)	Team work (2)	Presentation Skills (3)	Applied Engg & Mgmt principles (3)	Life-long learning (3)	Professional Skills (5)	Innovative Approach (5)	Total Marks (50)
Review of Project Stage 1	04	4	3	2	4	2	2	2	2	3	3	3	4	3	41

Comments: Good work. Take into consideration the constraints faced by the previous work done on Text Summarization and paraphrasing.

Dr. Deepali Sonje