
AI BASED TEXT TO QUIZ GENERATOR

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ABSTRACT

The AI-Based Text to Quiz Generator plays an important role in transforming textual learning materials into structured assessment content for educational environments. However, preparing quizzes manually from textbooks, lecture notes, and study materials is time-consuming and requires significant effort from educators. This project proposes an AI-Based Text to Quiz Generator that integrates Natural Language Processing (NLP) techniques to automatically generate quiz questions from textual input. The system processes text using preprocessing techniques such as tokenization, stopword removal, and sentence segmentation to prepare the data for analysis. Important keywords are extracted using methods such as TF-IDF and RAKE algorithms to identify significant concepts within the content. Based on these extracted keywords, the system generates Multiple Choice Questions (MCQs), fill-in-the-blank questions, and True/False questions along with correct answers. The proposed system improves efficiency in quiz preparation, reduces manual workload for educators, and enables automated generation of structured assessment content for digital learning platforms.

KEYWORDS: Artificial Intelligence, Natural Language Processing, Text-to-Quiz Generation, TF-IDF, Keyword Extraction, Automated Question Generation, Educational Technology.

1. INTRODUCTION

Educational institutions widely use quizzes to evaluate student understanding, but preparing quiz questions manually from textbooks and study materials is time-consuming and requires significant effort from educators. With the growth of digital learning and large volumes of content, traditional manual quiz preparation becomes inefficient. Advances in Artificial Intelligence (AI) and Natural Language Processing (NLP) enable systems to analyze text and extract key concepts automatically. This project proposes an AI-Based Text-to-Quiz Generator that uses NLP techniques such as text preprocessing and keyword extraction methods like TF-IDF and RAKE to generate quiz questions including Multiple Choice Questions, Fill-in-the-Blank, and True/False. The system aims to reduce manual effort and support efficient automated assessment generation in digital learning environments.

2. LITERATURE REVIEW

Educational institutions widely use quizzes to evaluate student understanding, but preparing quiz questions manually from textbooks and study materials is time-consuming and requires significant effort from educators. With the growth of digital learning and large volumes of content, traditional manual quiz preparation becomes inefficient. Advances in Artificial Intelligence (AI) and Natural Language Processing (NLP) enable systems to analyze text and extract key concepts automatically. This project proposes an AI-Based Text-to-Quiz Generator that uses NLP techniques such as text preprocessing and keyword extraction methods like TF-IDF and RAKE to generate quiz questions including Multiple Choice Questions, Fill-in-the-Blank, and True/False. The system aims to reduce manual effort and support efficient automated assessment generation in digital learning environments.

3. Proposed System Architecture

The proposed system consists of three main components:

1. Input Processing Layer
2. Text Analysis Layer
3. User Interface Layer

The input processing layer allows users to provide textual content through the application interface.

The system accepts text input and prepares it for further processing and analysis.

The text analysis layer performs text preprocessing, keyword extraction, and automated question generation using Natural Language Processing techniques such as TF-IDF and

tokenization.

The user interface layer includes a web-based application that displays generated quiz questions and answer keys in a structured format for the user.

System Architecture Diagram

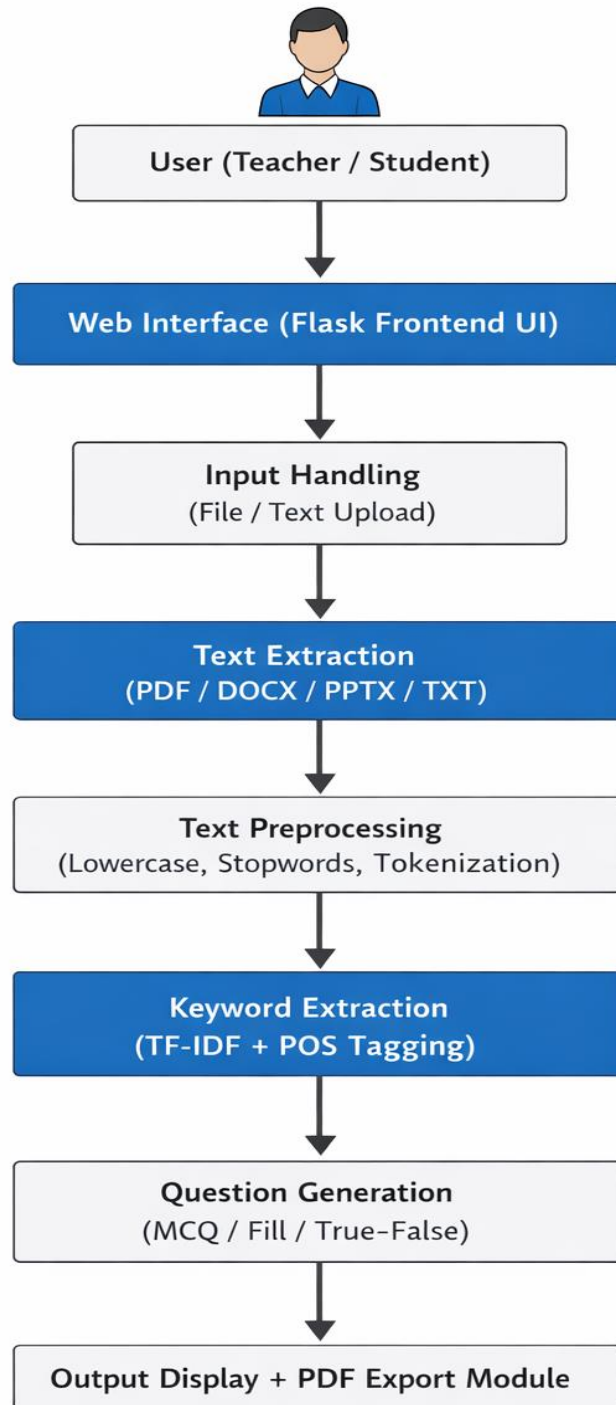


Figure 1: System Architecture of AI based text to quiz generator.

4. METHODOLOGY

The methodology of the proposed system involves text input collection, text preprocessing, keyword extraction, question generation, and result display. The system accepts textual content from the user through the application interface for analysis.

The preprocessing stage prepares the input text by performing operations such as tokenization, stopword removal, sentence segmentation, and text normalization. These techniques remove unnecessary words and organize the text for further processing.

Keyword extraction techniques such as TF-IDF and RAKE are used to identify important concepts within the text. These keywords represent key information that is useful for generating quiz questions.

Based on the extracted keywords and processed sentences, the system generates different types of questions including Multiple Choice Questions, Fill-in-the-Blank questions, and True/False questions.

Users can view the generated quiz through the application interface where questions and answers are displayed in a structured format.

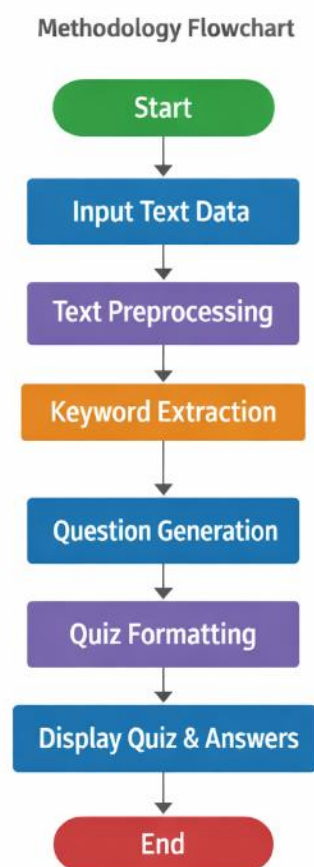


Figure 2: Methodology Flowchart.

4.1 Hardware Design

The hardware components used in the system include a computer or laptop that serves as the primary platform for running the AI-Based Text-to-Quiz Generator application. The computer is responsible for executing the Python-based program and supporting the Natural Language Processing libraries required for text analysis and question generation. The processor and memory of the system perform key operations such as text preprocessing, keyword extraction, and automated question generation from the provided input text. Adequate storage is also required to maintain project files, installed software, and required libraries used in the implementation. Users interact with the system through the computer interface, where they can provide textual input and view the generated quiz questions and answers displayed on the screen.

4.2 Software Design

The software architecture of the system includes text processing, backend application development, and user interface design. The system is developed using Python to implement the Natural Language Processing techniques required for quiz generation.

The backend application is developed using the Flask framework, which handles user input, processes textual data, and manages the quiz generation process. It performs tasks such as text preprocessing, keyword extraction, and automated question generation.

The user interface is developed using HTML, CSS, and JavaScript to provide an interactive web application. The interface allows users to input text and view the generated quiz questions and answers in a structured format.

5. RESULTS AND DISCUSSION

The implemented AI-Based Text-to-Quiz Generator successfully processes textual input and generates quiz questions automatically. The system analyzes the input text using Natural Language Processing techniques such as text preprocessing, keyword extraction, and sentence analysis.

The generated output includes different types of questions such as Multiple Choice Questions, Fill-in-the-Blank questions, and True/False questions. The questions are displayed through the web application interface in a clear and structured format along with their corresponding answers.

The system demonstrates improved efficiency in quiz preparation compared to traditional manual methods. By automating the question generation process, the system reduces the time

and effort required by educators while providing structured assessment content for learning environments.

6. CONCLUSION

This project presented an AI-Based Text-to-Quiz Generator that utilizes Natural Language Processing techniques to automatically generate quiz questions from textual content. The system processes input text through preprocessing, keyword extraction, and automated question generation methods to produce meaningful assessment questions. The proposed system generates different types of questions such as Multiple-Choice Questions, Fill-in-the-Blank questions, and True/False questions based on the analyzed text. The integration of a web-based interface allows users to easily input text and view the generated quiz in a structured format. The implementation of this system can significantly reduce the time and effort required for manual quiz preparation, improve efficiency in assessment creation, and support automated learning evaluation in modern educational environments.

7. Future Work

Future improvements to the system may include:

- Integration of advanced Natural Language Processing models such as deep learning-based question generation techniques
- Support for additional input formats such as PDF, DOCX, and other educational document types
- Enhancement of the question generation module to support more complex question types and difficulty levels
- Integration with online learning platforms to automatically generate quizzes for digital courses

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