

MULTIPLE-CHOICE QUESTIONS GENERATOR

GENERATES MCQ BASED ON THE LEARNING MATERIALS

INTRODUCTION

WHAT IS MCQS GENERATOR?

Given a **learning material** in the text file format, **generate** a list of **questions with options**.

THE NLP CONCEPTS INVOLVED

How does it work?

- Text Summarization
- Stop Words Removal
- Part-of-Speech Tagging (POS) Filtering
- Keywords Extraction
- Word Sense Disambiguation (WSD)
- Usage of WordNet and ConceptNet

CONCLUSION

Automated Generation of Questions

Reduce manual effort and time needed for educators to focus on other teaching responsibilities.

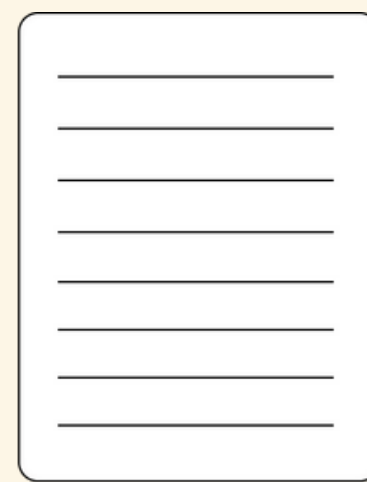
Enhanced Learning Experience

Learners have more opportunities to **test their knowledge**, especially during self-learning.

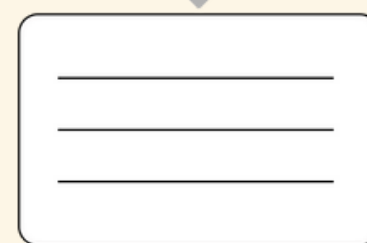
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PREPROCESSING



Obtain summary



Extract keywords

```
[ keyword_1, keyword_2, keyword_3, ..., keyword_n ]
```

Map keyword with its sentence

NLP TECHNIQUE

```
{ keyword_1: ['sentence_1', 'sentence_2'], keyword_2: ['sentence_1', 'sentence_2'], ... }
```

Find keyword's Word Sense

```
{ keyword_1: [ 'distractor_1', 'distractor_2', 'distractor_3' ], ... }
```

Find distractors

Question (sentence)

Correct answer (keyword)

Wrong answer (distractor)

Wrong answer (distractor)

Wrong answer (distractor)

Deploy to Streamlit

TOOLS:



pke

FlashText

Extractive Summarizer

- **Tokenize** the text.
- Calculate word **frequency**.
- Assign a **score** to each sentence.
- Select sentence with a score higher than the threshold value is included as part of the **summary**.

MultipartiteRank Algorithm

- Select **candidate** keywords.
- Construct **multipartite graph**.
- **Traverse** randomly to assign **weight**.
- **Rank** keywords based on weights.

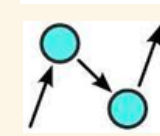
Sentence Mapping

- Add keywords to **KeywordProcessor()**.
- **Map** the extracted **keywords** to **sentences** in which they appear.

TOOLS:

pywsd

WordNet



ConceptNet

An open, multilingual knowledge



Word Sense Disambiguation

- Approach 1
 - Identify the word sense using **Simple Lesk Algorithm**.
- Approach 2
 - Calculates **Wu-Palmer similarity**.
- Let word sense be the one with the **lower index** in the synsets.

Generate Distractors

- Using **WordNet**
 - Select **hyponyms** of hypernym of the synsets
 - **Lexical** relationships based on synsets
- Using **ConceptNet**
 - Broader knowledge graph that represents **general knowledge** and relationships between concepts