BVRIT HYDERABAD College of Engineering for Women

Department of Information Technology

Automated Question Generation using NLP

Under the Guidance of

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Contents

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Abstract

- The purpose of this system is to generate questions and evaluating their answers automatically.
- It takes text as input and summarizes using the BERT algorithm and generates questions using T5 Model.
- SQUAD Dataset is used for training the model.
- Distractors are generated using the Wordnet, Conceptnet approach.
- This system solves the problem of the manual creation of questions and reduces time consumption.

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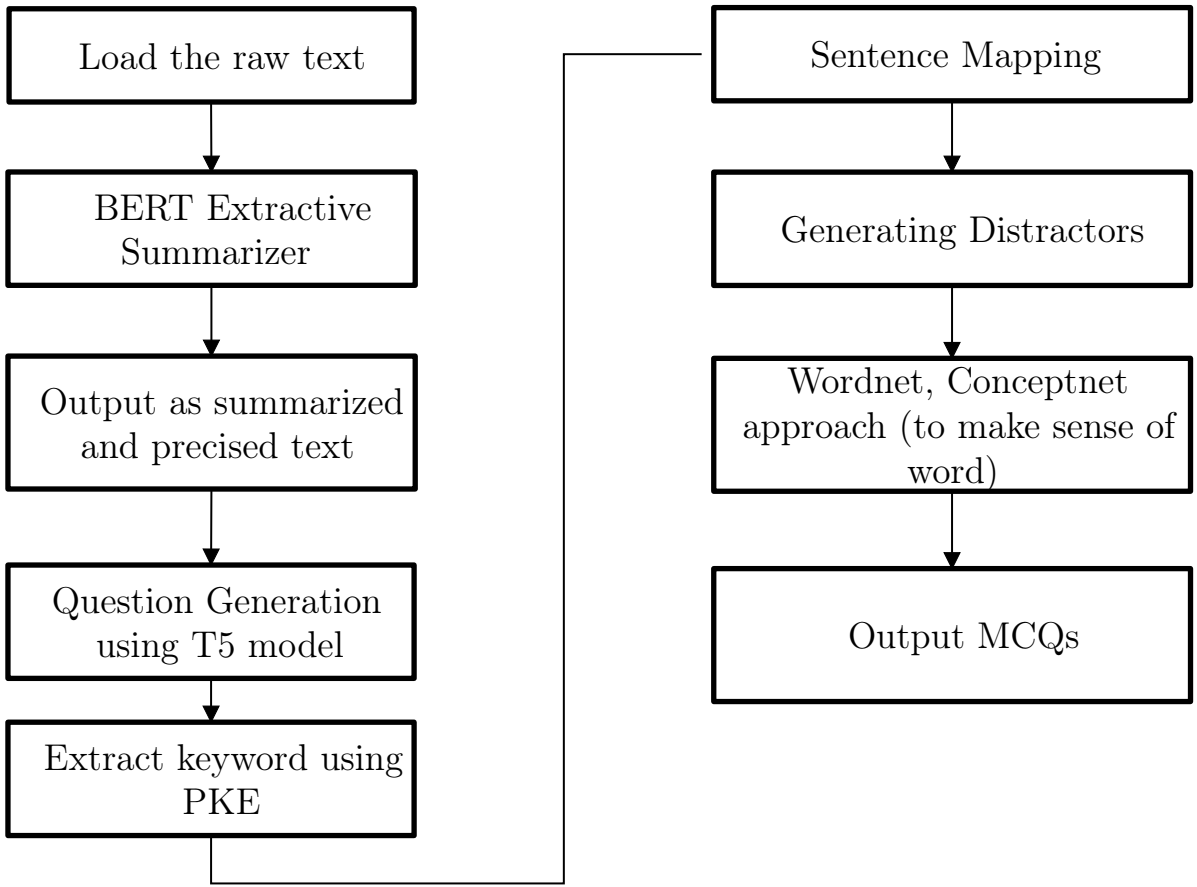
Modules

- Abstractive/Extractive Summarization
- Question Generation and Paraphrasing
- Extracting Keywords
- Generating Distractors
- Gradio UI Visualization.

Design Architecture



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Implementation

```
#  An example of a word with two different senses
original_word = "cricket"

syns = wn.synsets(original_word,'n')

for syn in syns:
  print (syn, ": ",syn.definition(),"\n" )


synset_to_use = wn.synsets(original_word,'n')[0]
distractors_calculated = get_distractors_wordnet(synset_to_use,original_word)

print ("\noriginal word: ",original_word)
print (distractors_calculated)


original_word = "cricket"
synset_to_use = wn.synsets(original_word,'n')[1]
distractors_calculated = get_distractors_wordnet(synset_to_use,original_word)

print ("\noriginal word: ",original_word)
print (distractors_calculated)
```

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Results

```
Synset('cricket.n.01') :  leaping insect; male makes chirping noises by rubbing the forewings together

Synset('cricket.n.02') :  a game played with a ball and bat by two teams of 11 players; teams take turns trying to score runs


original word:  cricket
['Grasshopper']

original word:  cricket
['Ball Game', 'Field Hockey', 'Football', 'Hurling', 'Lacrosse', 'Polo', 'Pushball', 'Ultimate Frisbee']
```

Time Line

Date(from-to)	Duration	Task
29/9/2022-15/10/2022	2 weeks	• Domain selection and abstract submission
16/10/2022-13/11/2022	4 weeks	• Literature survey • Requirement analysis • Data Preprocessing
14/11/2022-23/12/2022	5 weeks	• Integrating UI with modules

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Conclusion

The problem of manually creating questions is solved with the proposed system. The proposed system creates automated questions with the help of NLP that reduces human intervention and it is a cost and time effective system. And the accuracy of the distractor generated is reasonably high. This system not only helps teachers with E-assessments but also helps students who are preparing for competitive exams. Students can test their ability to solve the questions and can also check their understanding of the concepts.

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References

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- Deepshree S. Vibhandik, Rucha C. Samant "Automatic / Smart Question Generation System for Academic Purpose", International Journal of Emerging Trends & Technology in Computer Science (IJETTCS), Volume 4Issue 4, July - August 2020.
- D. R. CH and S. K. Saha, "Automatic Multiple Choice Question Generation From Text: A Survey," in IEEE Transactions on Learning Technologies, vol.13, no. 1, pp. 14-25, 1 Jan.-March 2019, doi: 10.1109/TLT.2019.2889100.

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THANK YOU