Automated MCQ Generator

AI-Powered Multiple Choice Question Generation from Educational Text using NLP and Transformer Models

PROBLEM STATMENT

Creating high-quality multiple-choice questions from educational content is time-consuming and requires significant effort from educators

WORKFLOW

📄 Input Text → 🔍 Extract Entities

🔍 Entities → ❓ Generate Questions

❓ Questions → 🎲 Create Distractors

🎲 Distractors → ✅ Final MCQs

KEY FEATURES

- Automatic extraction of key concepts and entities from text

- Context-aware question generation using T5 transformer

- Intelligent distractor creation for plausible wrong answers

- User-friendly web interface for easy access

- Supports various educational domains and subjects

BENEFITS & IMPACT

- Consistency: Ensures uniform question quality

- Scalability: Handles large volumes of content

- Accessibility: Empowers educators with limited resources

MY SOLUTION

An automated system that generates relevant, well-structured MCQs from any textbook passage using advanced NLP techniques.
- **Question Generation**: T5-based model with highlight mechanism
- **Answer Extraction**: SpaCy NER and noun phrase chunking
- **Distractor Generation:** Semantic similarity using sentence embeddings
- **User Interface**: Gradio web application

IMPLEMENTATION

Model Selection:
Valhalla T5-base-qg-hl for highlight-based question generation provides superior contextual understanding.

NLP Pipeline:
SpaCy processes text for named entity recognition and syntactic analysis.

Embedding Model:
Sentence-transformers enable semantic similarity matching for distractor generation.

FUTURE ENHANCMENTS

Difficulty Levels	Multi-language Support	Feedback Loop	Integration
Implement adaptive difficulty scaling based on Bloom's taxonomy	Extend to generate questions in multiple languages	Incorporate teacher feedback to improve question quality	API development for LMS integration (Moodle, Canvas)