Design Documents

- Agent Design

Agent Design

Overview

This pipeline focuses on generating exam questions from textbooks, emphasizing quality control at various stages. It involves a sequence of specialized agents, each responsible for a specific task, from text extraction to question generation, ensuring accuracy and relevance throughout the process.

Workflow

PDF Text Extraction Agent

Purpose: Converts textbook content from PDF to a structured text format.
Input: Textbook PDF.
Output: Structured text document.

Topic Identification Agent

Purpose: Identifies and categorizes topics within the text.
Input: Structured text document.
Output: List of topics with associated text segments.

Topic Review Agent

Purpose: Ensures comprehensive coverage and accuracy of topic identification.
Input: List of topics, associated text, and the original structured text document.
Output: Verified and refined list of topics.

Topic Content Extraction Agent

Purpose: Extracts detailed content for each verified topic.
Input: Verified list of topics.

Output: Detailed content for each topic.

Topic Content Review Agent

Purpose: Reviews extracted content for completeness and relevance.
Input: Detailed topic content and the original structured text document.
Output: Reviewed and finalized topic content.

Syllabus Alignment Agent

Purpose: Aligns identified topics with syllabus items.
Input: Syllabus, finalized topic content.
Output: Mapping of topics to syllabus items.

Question Generation Agent

Purpose: Generates exam questions based on the aligned topics and syllabus items.
Input: Mapped topics to syllabus items.
Output: Set of exam questions.

Quality Control Mechanisms

- Each review agent (Topic Review Agent and Topic Content Review Agent) has access to the original structured text document for thorough cross-referencing.
- Feedback loops allow for content to be revisited and refined based on the review agents' findings.
- Quality checks ensure accuracy, coverage, and relevance of both topic identification and content extraction.

Interaction Between Agents

- Agents work sequentially, with each stage building upon the previous one.
- Review agents play a critical role in backtracking for quality assurance, ensuring alignment with the original text and syllabus requirements.

Additional Considerations

- **Scalability:** Capable of handling different sizes and complexities of textbooks and syllabuses.
- **Customization:** Flexible to adapt to various subjects and educational levels.
- **Integration:** Designed for easy integration with educational tools and platforms.