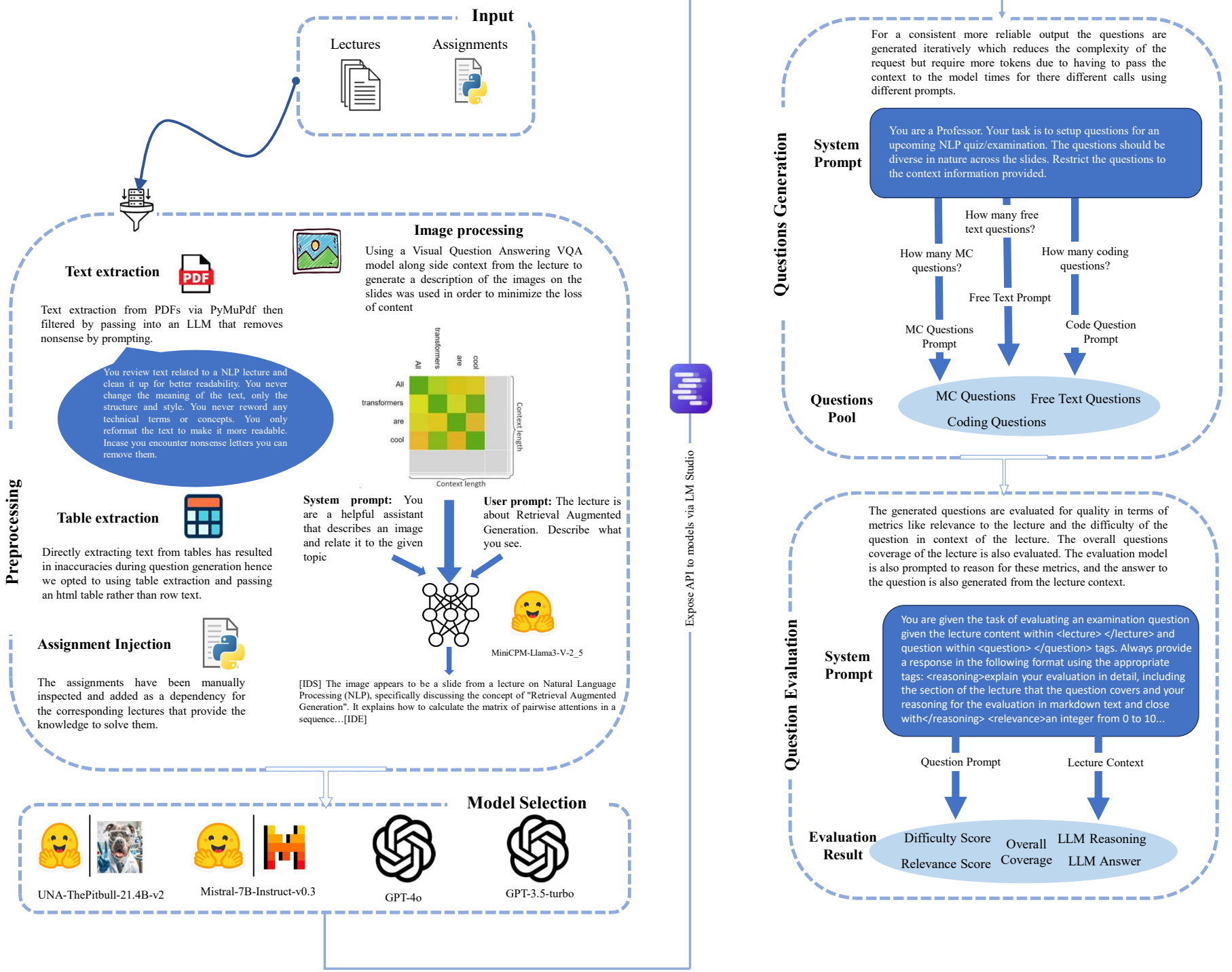
Input
Lectures
Assignments
Preprocessing
Text extraction
PDF
Text extraction from PDFs via PyMuPdf then filtered by passing into an LLM that removes nonsense by prompting.
You review text related to a NLP lecture and clean it up for better readability. You never change the meaning of the text, only the structure and style. You never reword any technical terms or concepts. You only reformat the text to make it more readable. Incase you encounter nonsense letters you can remove them.
Table extraction
Directly extracting text from tables has resulted in inaccuracies during question generation hence we opted to using table extraction and passing an html table rather than row text.
Assignment Injection
The assignments have been manually inspected and added as a dependency for the corresponding lectures that provide the knowledge to solve them.
Image processing
Using a Visual Question Answering VQA model along side context from the lecture to generate a description of the images on the slides was used in order to minimize the loss of content
All
transformers
are
cool
Context length
System prompt: You are a helpful assistant that describes an image and relate it to the given topic
User prompt: The lecture is about Retrieval Augmented Generation. Describe what you see.
MiniCPM-Llama3-V-2_5
[IDS] The image appears to be a slide from a lecture on Natural Language Processing (NLP), specifically discussing the concept of "Retrieval Augmented Generation". It explains how to calculate the matrix of pairwise attentions in a sequence…[IDE]
Model Selection
UNA-ThePitbull-21.4B-v2
Mistral-7B-Instruct-v0.3
GPT-4o
GPT-3.5-turbo
Expose API to models via LM Studio
Questions Generation
For a consistent more reliable output the questions are generated iteratively which reduces the complexity of the request but require more tokens due to having to pass the context to the model times for there different calls using different prompts.
System Prompt
You are a Professor. Your task is to setup questions for an upcoming NLP quiz/examination. The questions should be diverse in nature across the slides. Restrict the questions to the context information provided.
How many MC questions?
How many free text questions?
How many coding questions?
MC Questions Prompt
Free Text Prompt
Code Question Prompt
Questions Pool
MC Questions
Free Text Questions
Coding Questions
Question Evaluation
The generated questions are evaluated for quality in terms of metrics like relevance to the lecture and the difficulty of the question in context of the lecture. The overall questions coverage of the lecture is also evaluated. The evaluation model is also prompted to reason for these metrics, and the answer to the question is also generated from the lecture context.
System Prompt
You are given the task of evaluating an examination question given the lecture content within <lecture> </lecture> and question within <question> </question> tags. Always provide a response in the following format using the appropriate tags: <reasoning>explain your evaluation in detail, including the section of the lecture that the question covers and your reasoning for the evaluation in markdown text and close with</reasoning> <relevance>an integer from 0 to 10...
Question Prompt
Lecture Context
Evaluation Result
Difficulty Score
Relevance Score
Overall Coverage
LLM Reasoning
LLM Answer