Final project: Telegram bot for IT-interview preparation

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Goal:

Using modular RAG, LLM API calls, database make a telegram-bot that allows:

- generate questions on user's theme
- generate full Test by specific track
- generate Report based on user's answers

Techniques used in project

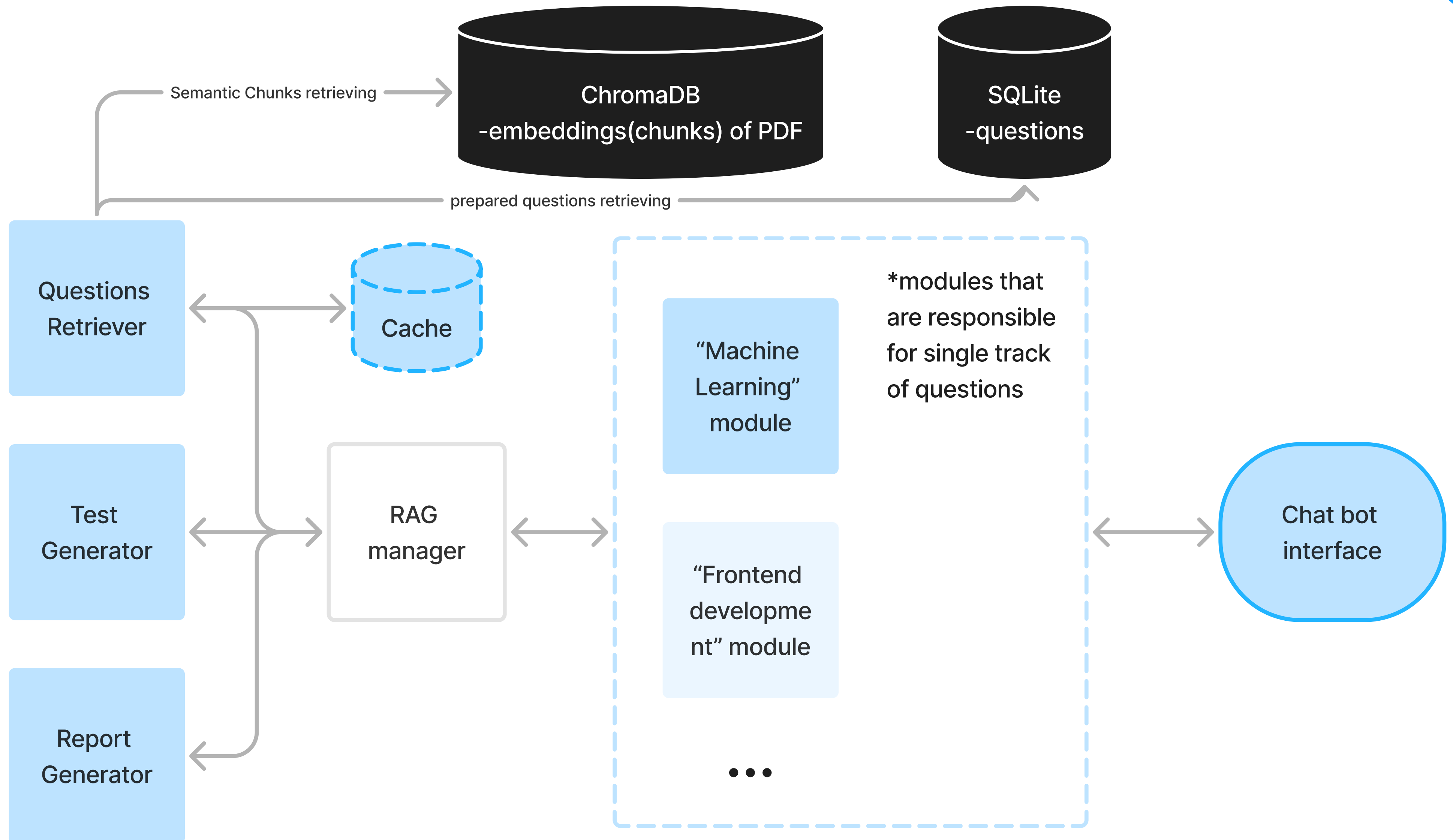|		
Prompt-engineering	Modular RAG	Semantic Chunking
Error Handling Retry	Caching of generated questions	Automated Benchmark testing

Stack:

- Python
- ChromaDB, SQLite
- gemini-1.5-flash-latest/llama-3.1-70b-versatile
- all-MiniLM-L6-v2
- python-telegram-bot

System Architecture

Semantic Chunks retrieving →

ChromaDB -embeddings(chunks) of PDF

SQLite -questions

prepared questions retrieving →

Questions Retriever

Cache

Test Generator

RAG manager

Report Generator

"Machine Learning" module

*modules that are responsible for single track of questions

"Frontend development" module

...

Chat bot interface

Demo

[Gitlab code link](#)

Automated Benchmark testing results

BENCHMARKING RESULTS UNDER LLM JUDGE EVALUATION (LLAMA-3.1-70B-VERSATILE)

1 Quality of questions generations.

2 Quality of answers evaluation.

Evaluation size was 100

```
Accuracy: 0.96
Precision: 0.96
Recall: 1.00
F1 Score: 0.98
```

Evaluation size was 100

```
Accuracy: 0.6042
Precision: 0.6364
Recall: 0.5600
F1 Score: 0.5957
```