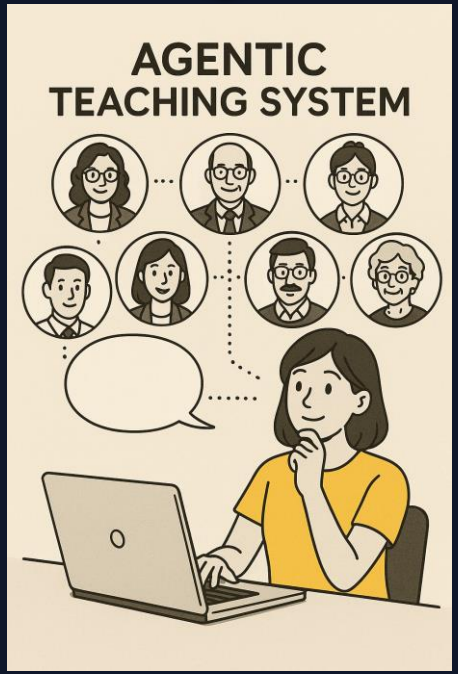
Project




# Agentic Teaching System

# Background & Motivation

**Kafka feature**

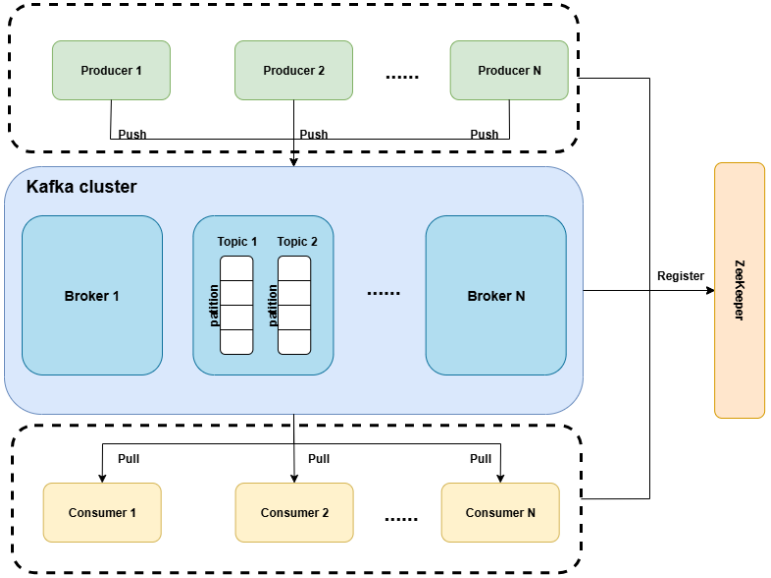
- **Distributed storage:** Partitions replicate messages across brokers, ensuring high availability and easy scaling.
- **Decoupled transport:** Producers and consumers operate independently—any service can publish or subscribe without tight integration.
- **Replay & durability**: Messages can be replayed from the log for recovery, backfills, or debugging.

**Key Idea:**

- Publish each user question once into Kafka → fan-out to many independent AI "teacher" agents (Chinese, English, etc.) in parallel → collect all answers on a reply topic.

**Result:**

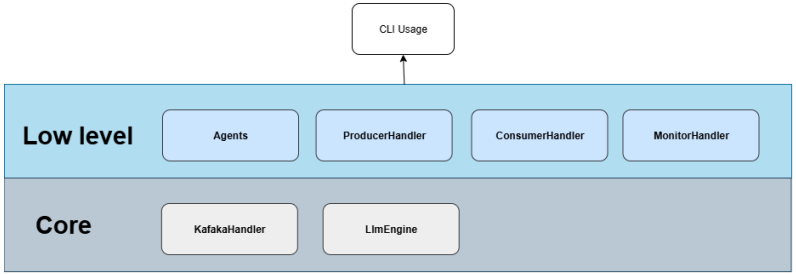
- A reliable, fast, and easily expandable Agentic Teaching System powered by Kafka's storage, distribution, and replay capabilities.



# Target Feature & Module DataFlow

**Note:** Considering development time, we focused on implementing the following core capabilities

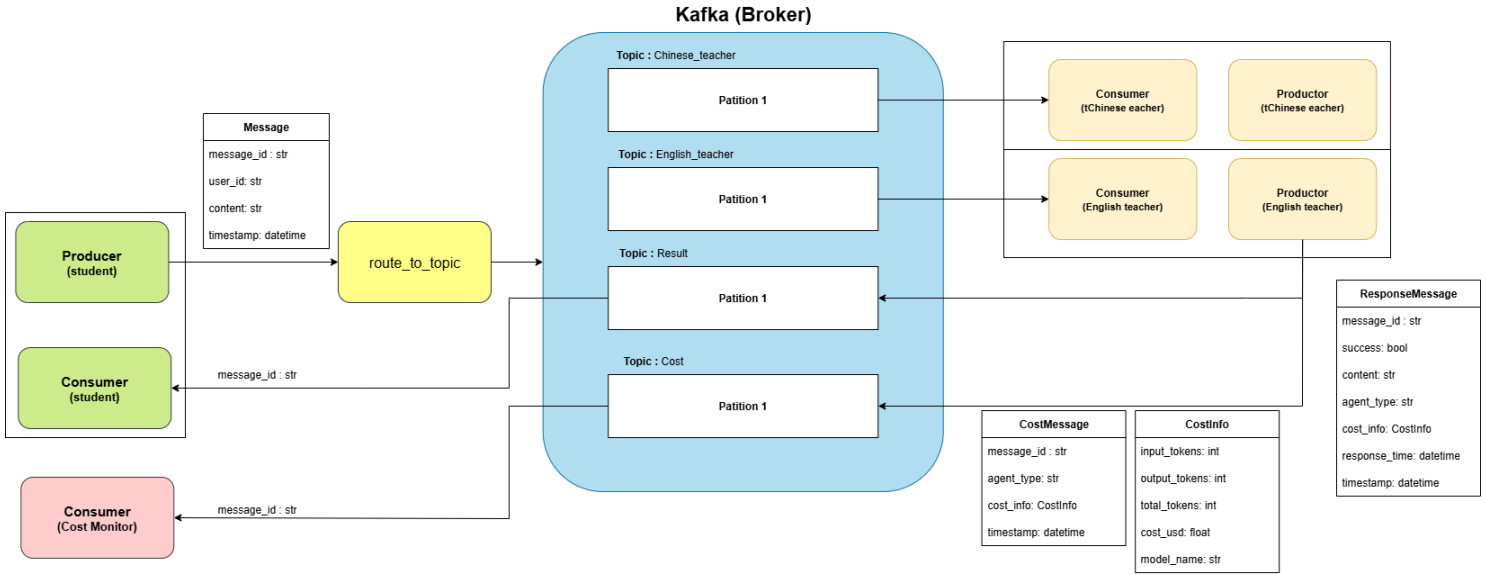
- **User Authentication**: Sign up, log in, and manage roles/permissions
- **Multi-Model Teachers**: Choose from various LLM services (Gemini, GPT, Claude, local Ollama, etc.) as "teachers"
- **Real-Time Cost Tracking**: View token usage and costs after each chat session
- **Learning History**: Automatically save and tag conversation history for review
- **Tool-Assisted Answers**: Teachers can invoke web search, calculator, document lookup, and more to improve response quality



# Key function



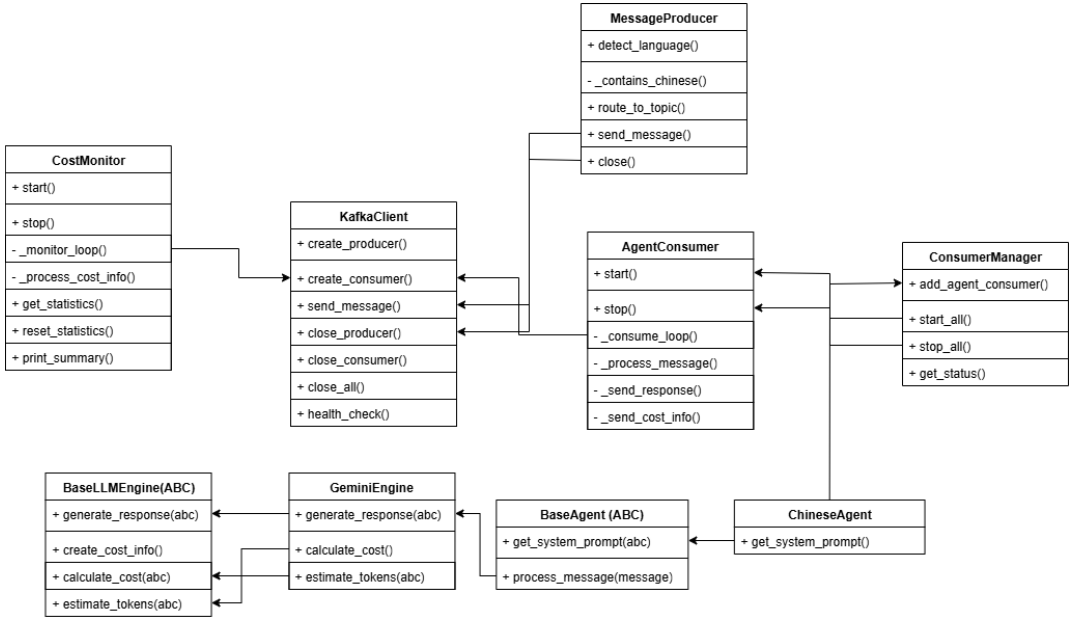
## DataFlow



# Project Architecture



## Module UML



# Final Summary

**Kafka-Centric** Core:
One KafkaClient handles all messaging—producers, agents, monitors.

**Clean Separation:**
- API Layer for requests & auth
- Orchestration Layer for agents & handlers
- Infrastructure Layer for Kafka, LLM engines, tools

**Plug-and-Play:**
- Add new agents by implementing an AgentConsumer
- Swap or add LLMs via BaseLLMEngine subclasses
- Extend tools without touching core

**Ready to Grow**: Same structure scales with tenant management, dashboards, web UI, and more.

# THANK YOU!


0975-134-296

04-25943310

lastlife0212@gmail.com