———

"

"   "— — "

"   "— — "

Large Language Model, LLM   Qwen GPT

"   "   "— — "   RAG

Intelligent Tutoring Systems, ITS

Learning Management System, LMS

Essay Scoring, AES

ChatGPT Qwen

Retrieval-Augmented Generation, RAG   GraphRAG

"   "" "   AI

" / "

"   "

API

1.   ” — — ”

 1

```
erDiagram
    Student ||--o| GlobalProfile : " "
    GlobalProfile ||--o{ CourseProfile : " "
    Student ||--o{ LearningEvent : " "
    Course ||--o{ CourseProfile : " "

    GlobalProfile {
        int student_id PK
        json global_competencies "    "
        int total_study_hours "   "
        json learning_style "   "
    }

    CourseProfile {
        int student_id PK
        int course_id PK
        json weak_points "  "
        json completed_topics "   "
        int study_minutes "    "
    }

    LearningEvent {
        int id PK
        int student_id FK
        int course_id FK
        string event_type "  "
        json payload "  "
        datetime created_at " "
    }
```

2.

 3

```
flowchart LR
    A[  <br/>  ] --> B{  }
    B -->|   | C1[    ]
    B -->|   | C2[    ]
    B -->|   | C3[    ]
    B -->| | C4[    ]

    C1 --> D[   ]
```

```
    C2 --> D
    C3 --> D
    C4 --> D

    D --> E[  ]
    D --> F[  ]
    D --> G[  ]
    D --> H[  ]

    E --> I[  <br/>   ]
    F --> I
    G --> I
    H --> I

    I --> J[   ]
```

3.   "   +   "   /

 4

```
flowchart LR
    U[  /  ] --> A[AI  <br/>  /  ]
    A --> T{    ?}
    T -->| | S[    <br/>(   /  )]
    S --> R[  / ]
    R --> A
    T -->| | A
    A --> F[  +   +   ]
    F --> P[     ]
```
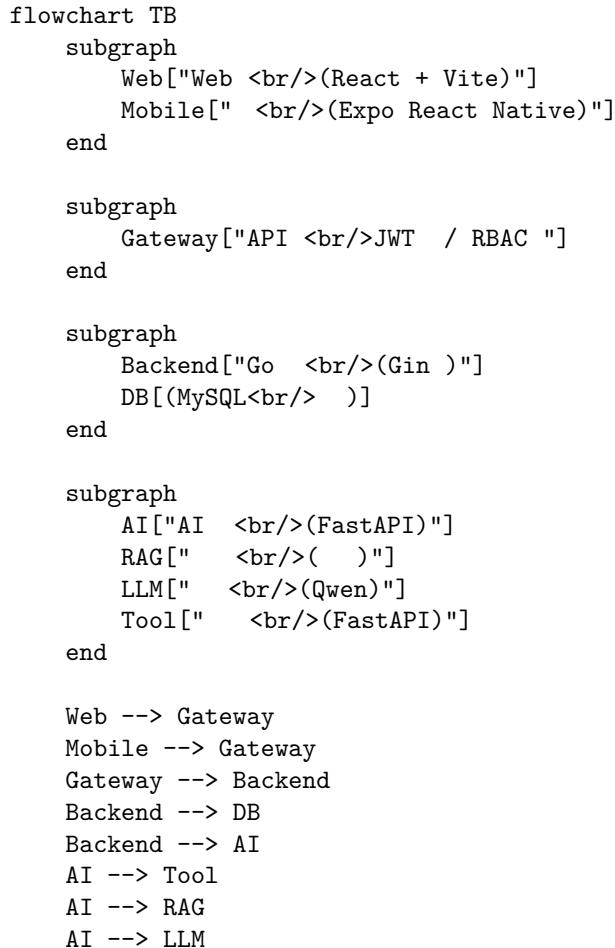
4.

5.   Web   API TypeScript   Web   React   Expo
React Native   AI

                    REST API

        Web   React Expo React Native   TypeScript   Web   WebView
              JWT   RBAC
        Go Gin   Handler-Service-Repository   MySQL
        AI   Python FastAPI   AI   Qwen
  +   "
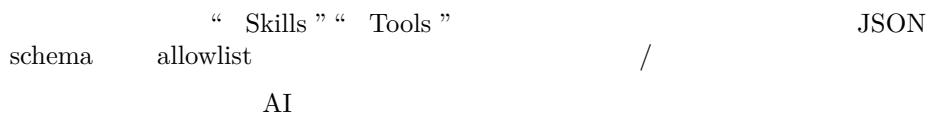
                                    3
```

GPU NPU    FPGA    GPU    NVIDIA RTX        vLLM
       NPU      Ascend    MindIE      GPU    20%      FPGA
Xilinx Alveo     Embedding    Embedding    INT8    FPGA    LLM
       GPU   25%        AI

**2**

```
flowchart TB
    subgraph
        Web["Web <br/>(React + Vite)"]
        Mobile[" <br/>(Expo React Native)"]
    end

    subgraph
        Gateway["API <br/>JWT  / RBAC "]
    end

    subgraph
        Backend["Go  <br/>(Gin )"]
        DB[(MySQL<br/>  )]
    end

    subgraph
        AI["AI  <br/>(FastAPI)"]
        RAG["   <br/>(   )"]
        LLM["  <br/>(Qwen)"]
        Tool["   <br/>(FastAPI)"]
    end
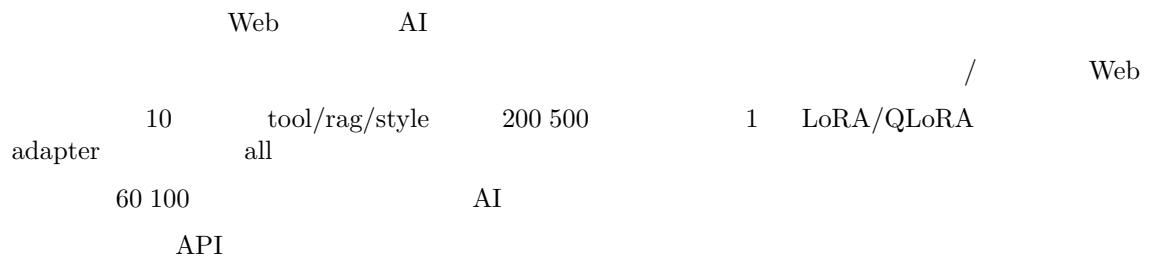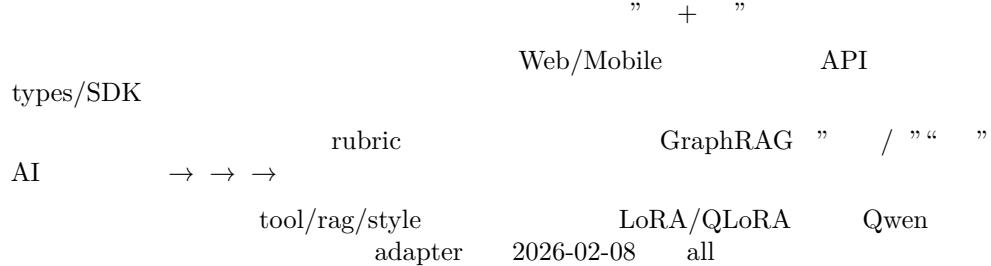
    Web --> Gateway
    Mobile --> Gateway
    Gateway --> Backend
    Backend --> DB
    Backend --> AI
    AI --> Tool
    AI --> RAG
    AI --> LLM
```

                                   /

                              Reciprocal Rank Fusion

            " Skills " " Tools "   JSON
schema   allowlist   /

            AI

AI

API   Design Tokens

”   ”

” ”

"   +   "   "   " "   "

API   Web

” — —LoRA/QLoRA   — ”   / /

smoke

GPU NPU FPGA   GPU/NPU   FPGA Xilinx Alveo

Embedding   Embedding   INT8   FPGA   Recall@5

<2%   Embedding   GPU 180W 45W

20 30   /

Go Gin   React   Qwen   API   GPU

,

"   +

”

OAuth

2026-02-08

”   ”   ” + ”   ”   ”   ,

+   ”

1. 　　　　`code/`　　 Monorepo npm workspaces 　　　 types 　 SDK 　　　　 Web/Mobile 　 API 　 UI

2. **AI**　　 AI　 OpenAI-compatible　 GraphRAG　　　　　　　　 guided　　　　　　　　 ” HF　 → AI Service →　 ”

3. 　　　　　　　　　　　　 GraphRAG ingestion　 `.md/.markdown/.pdf/.txt` 　　 /　　 `--chunk-chars=1200`　　　 Embedding　 `api|local|hash|env` `text-embedding-v3`　　 FAISS　　　　　　　 " "

4. 　　　 /　　　 LoRA/QLoRA　　　 ”　 + smoke　 ” chat-style 　　 prompt/response

5. 　　　　　　　 " "　" "　　 Embedding　　　　　　　　 Chunking `text-embedding-v3`　　　　 GraphRAG　　　　　　　　　 " ___ ”　　　　　　　 " ___ ___ ”

6. 　 **2026-02-08**
   - 　　　　 1-4
   - 　 5
   - 　
   - 　
   - 　 17　 ReAct Toolformer MemGPT DPO GraphRAG

2026-02-08

　　　　　 2026-02-08　 " all　 +　 ”

`all`　 n=5

key_point_coverage	0.9167
refusal_accuracy	0.8000
response_format	1.0000
tool_call_accuracy	0.0000

n=6　3

key_point_coverage	0.7333
refusal_accuracy	0.7778
response_format	0.8333
tool_call_accuracy	0.0000

　　 all　　　　　　 `style/tool/rag` 　　　　 ”　　 ”" ”" ”

" + "

Web/Mobile API

types/SDK

rubric GraphRAG " / " " " "

AI → → →

tool/rag/style LoRA/QLoRA Qwen

adapter 2026-02-08 all

PPT

Web AI

/ Web

10 tool/rag/style 200 500 1 LoRA/QLoRA

adapter all

60 100 AI

API

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