

IntelliLearn+ Master Prompt for AI-Assisted Coding Agents

This document serves as a comprehensive blueprint for building, extending, and collaborating on the IntelliLearn

Content from IntelliLearn_Prompt_Blueprint.pdf

IntelliLearn+ - Hackathon Project Blueprint (AI Vibe Coding Context)

IntelliLearn+ - Hackathon Project Blueprint Context File

This document provides comprehensive project context for automated or assisted vibe-coding systems.

It includes detailed architecture, tech stack, pseudocode, modular instructions, and AI integration details.

No personal identifiers or author details are included. The language and structure are optimized for machine reading.

[PROMPT_SECTION_START: PROJECT_OVERVIEW]

Define IntelliLearn+ as a STEM and general education adaptive learning web platform.

The system uses FastAPI (Python) backend, React frontend, PostgreSQL database, OpenAI API for content generation,

and lightweight ML models for personalization. Include gamified learning elements such as XP, streaks, badges,

drag-and-drop playgrounds, and competitive lobbies.

[PROMPT_SECTION_END]

[PROMPT_SECTION_START: TECH_STACK]

Frontend: React.js + Tailwind CSS + Vite

Backend: Python + FastAPI

Database: PostgreSQL

AI Layer: OpenAI (for question generation, explanations) + Local ML (for adaptive recommendations)

Deployment: Azure, Docker containerized.

[PROMPT_SECTION_END]

[PROMPT_SECTION_START: FOLDER_STRUCTURE]

Describe the modular folder hierarchy for backend (FastAPI), frontend (React), and infrastructure files.

Include Docker, configuration, and documentation directories.

[PROMPT_SECTION_END]

[PROMPT_SECTION_START: DATABASE_SCHEMA]

Include SQL schema for users, documents, quizzes, questions, quiz_attempts, flashcards, XP events, and streaks.

Ensure privacy by collecting minimal data (no sensitive PII).

[PROMPT_SECTION_END]

[PROMPT_SECTION_START: API_ENDPOINTS]

Document JWT-based authentication endpoints (register, login, me).

Include endpoints for document upload, AI quiz generation, quiz attempts, flashcard CRUD, leaderboard, and weekly reports.

[PROMPT_SECTION_END]

[PROMPT_SECTION_START: AI_DESIGN]

OpenAI integration pseudocode:

- Generate MCQs, short-answer, drag-drop questions from uploaded notes.
- Extract keywords using GPT API.
- Generate ELI5, intermediate, and advanced explanations.

Local ML pseudocode: