CodeSnap Collaborator – Full Project Roadmap

👨‍💻 Type: Full-stack Web App (with LLM + Vision + Real-time Collaboration)
🧱 Stack: React + Tailwind + Node.js / FastAPI + GPT-4o, Claude, Gemini, TrOCR
🕒 Total Duration: 12–16 weeks

Phase 1: Planning & Setup (Week 1)

✅ Goals:

Define scope and MVP features

Choose tech stack

Setup repo and environment

🛠️ Tasks:

Create GitHub repo and project board

Setup Vercel (frontend) + Render/Railway (backend)

Prepare design wireframes (Figma)

Scaffold React + Tailwind project

📦 Deliverables:

GitHub repo initialized with base folders

Basic landing page & README

Phase 2: Editor + File Upload UI (Week 2–3)

✅ Goals:

Integrate Monaco Editor

Implement image upload + OCR

🛠️ Tasks:

Add Monaco editor component

Add drag/drop or upload image UI

Use TrOCR or PaddleOCR to extract code

Display OCR code in editor

📦 Deliverables:

OCR → Editor workflow functional

Syntax-highlighted editor working

Phase 3: LLM Integration (Week 4–5)

✅ Goals:

Send code to GPT-4o, Claude, Gemini

Display outputs

🛠️ Tasks:

Integrate model APIs

Create prompt templates (refactor, explain, generate)

Display output for each LLM

Handle API limits and errors

📦 Deliverables:

Code sent to all models

Outputs displayed side-by-side

Phase 4: Best Output Selector (Week 6–7)

✅ Goals:

Judge and pick best LLM result

🛠️ Tasks:

Use GPT-4o (judge prompt) to evaluate results

UI for selected “best output” and reason

View others' outputs on toggle

📦 Deliverables:

Final code + reasoning shown

Toggle to view all models’ responses

Phase 5: Real-time Collaboration (Week 8–9)

✅ Goals:

Enable shared editing with other users

🛠️ Tasks:

Use Yjs + y-websocket

Add session-based URLs

Show cursor/status for all users

📦 Deliverables:

Real-time editing with 2+ users working

Phase 6: Code Execution Environment (Week 10–11)

✅ Goals:

Let users run code

🛠️ Tasks:

Integrate JDoodle / Replit API / Code Runner

Capture stdout, stderr

Show output console

📦 Deliverables:

Code runs with output/error display

Phase 7: UI Polish, Themes, Save Sessions (Week 12–13)

✅ Goals:

Enhance UX and persistence

🛠️ Tasks:

Theme toggle (dark/light)

Save history to DB or localStorage

Add loading states, tooltips, etc.

📦 Deliverables:

Polished UI

Persistent sessions

Phase 8: Deployment & Showcase (Week 14+)

✅ Goals:

Deploy and prepare portfolio/demo

🛠️ Tasks:

Deploy frontend and backend

Write docs, API README

Publish on GitHub/Product Hunt

📦 Deliverables:

Deployed site

Documentation & demo video

Bonus Features (Post-MVP)

✨ Optional Future Ideas:

Whisper API for voice-to-code

Draw-to-code using BLIP-2 or CLIP

VS Code or Chrome extension

AI code pair programming mode

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