

Project Overview: AI-Powered Frontend Component Generator



Project Idea

A web-based tool designed for frontend developers (especially beginners) to:

1. Generate your own **CSS, React, React Native, or Flutter components** using **natural language prompts**.(e.g " Create 3d glass morphic login-button")
 2. Choose from a gallery of **pre-made UI components**.(i.e **pre-made template**)
 3. **Customize** existing components using a prompt (e.g., "Make it rounded and blue").
 4. Export or copy code.
 5. Store prompt + code in a vector DB for later retrieval or suggestions.
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Core Technologies

Frontend Framework

- **Framework:** Next.js (React-based)
- **Why:** Combines frontend + backend in one app, supports serverless APIs, and deploys easily via Vercel

Styling

- **CSS Utility:** Tailwind CSS
- **Component Library** (optional): ShadCN UI or Radix UI for consistent base components

LLM Integration

- **LLM Provider:** OpenAI (GPT-4) or Anthropic (Claude 3)

- **API Call Flow:**
 - User types a prompt (e.g., "a neuromorphic login form")
 - send it to the LLM via API
 - LLM returns HTML/CSS/JSX code
 - Showing the live preview and code side by side

Vector Database

- **DB:** Supabase Vector (preferred) or ChromaDB
- **Why:** To store and retrieve prompt+code pairs as embeddings for similarity search or personalization

Embeddings

- **Model:** OpenAI `text-embedding-3-small`
- **Use Case:** Generate a vector from prompt + code to store in the vector DB

Backend (Lightweight)

- **Method:** Next.js API routes (or Express.js if separate backend)
- **Tasks:**
 - Call LLM
 - Generate/store embeddings
 - Manage copy/export logs
 - (Optional) Auth, saving, user sessions

Authentication (Optional)

- **Options:** Supabase Auth or NextAuth.js (email, GitHub, etc.)

User Flow

1. User lands on homepage
2. Can choose to:
 - Browse UI component gallery (i.e use directly the existing component)
 - Type prompt to generate new component
 - Edit/customize an existing one
3. Gets preview and editable code
4. On export/copy:
 - Save prompt + code to vector DB
 - Optionally tag with user ID or session
5. In future, show similar components via embedding search

Feature Specification

Prompt to Component

- Input: Text prompt
- Output: Rendered component + code (HTML/CSS/JSX)
- Optional: Choose framework (React/Flutter/Native)

Component Gallery

- Search/browse UI components
- Filter by type (button, card, nav, etc.)

Customize via Prompt

- Apply prompt on existing code to modify it

Export/Copy

- User copies/downloads code
- Trigger to store in vector DB with metadata

Embedding Search

- Find similar components based on:
 - Prompt
 - Code style
 - Functionality
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Optional Future Features

- **Chat-bot integration** :integrating chat bot in their own web page like chatbase.co
 - **A full -frontend generation**: generating full frontend with modern UI
 - **Image to code**: Asking to convert the specific image into code
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Not in Scope (Initial Version)

- No LLM fine-tuning
 - No training own models (use APIs only)
 - No image generation or Figma integration (yet)
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Tech Stack Summary

Feature	Tool
Frontend	Next.js + Tailwind CSS
Backend	Next.js API routes
LLM Integration	OpenAI GPT-4 / Claude 3
Embedding Model	OpenAI <code>text-embedding-3</code>
Vector DB	Supabase Vector / ChromaDB
Auth (optional)	Supabase Auth / NextAuth
Deployment	Vercel + Supabase



Target Audience

- Beginner to mid-level frontend developers
 - Indie hackers building fast MVPs
 - Designers who want to generate functional code
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Reach Me

If you're interested in contributing, collaborating, or have feedback on this project:

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