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# AI Powered Website Generator

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*Abstract*- In the modern digital ecosystem, websites have become a fundamental requirement for businesses, startups, educational institutions, and individuals. However, traditional website development involves multiple technical stages such as requirement analysis, UI/UX design, frontend and backend implementation, testing, and deployment, which demand significant time and technical expertise. Although AI-driven website builders have emerged to simplify this process, most existing tools generate static websites in a single iteration, lack conversational continuity, and provide limited access to the generated source code.

This paper proposes an AI-powered website builder using conversational generation that enables users to create and iteratively refine websites through natural language interaction. The proposed system allows users to continuously modify the website using conversational prompts, preview changes in real time, manually edit generated HTML, CSS, and JavaScript code, and export the final website for deployment. The system is developed using Next.js for frontend and API handling, Supabase for authentication and database management, and generative AI models for dynamic website generation. The solution bridges the gap between non-technical users and professional developers by combining AI automation with developer-level control.

***Index Terms*** **-** Artificial Intelligence, Website Builder, Conversational AI, Generative AI, Next.js, Supabase, Web Automation.

## I. INTRODUCTION

In today's digital era, a professional online presence is essential for organizations and individuals. Traditional website development follows a structured lifecycle involving multiple phases such as requirement gathering, design, development, testing, and deployment. This process often requires collaboration between technical experts and stakeholders, leading to increased development time and cost.

Recent advances in artificial intelligence, particularly generative AI and large language models, have enabled automation in software development. AI-assisted tools aim to reduce development complexity while maintaining flexibility. However, most existing AI website builders lack conversational refinement, regenerate websites from scratch for minor changes, and do not provide code-level transparency.

The proposed AI-powered website builder using conversational generation overcomes these limitations by introducing an interactive conversational interface where users can incrementally improve the same website. This approach significantly enhances usability, customization, and development efficiency.

## II. LITERATURE REVIEW

Several studies have explored the use of artificial intelligence in web development automation. Early website builders were primarily template-based, offering limited customization. With the evolution of AI-driven systems, generative models have been used to create web layouts and content automatically.

Smith et al. (2023) observed that most AI website generators produce static outputs without contextual continuity. Kumar and Patel (2024) highlighted that conversational AI improves system usability by

maintaining context across interactions. Zhao (2024) emphasized the importance of live preview and code-level access in AI-assisted development tools.

Research on modern web frameworks shows that Next.js improves performance through server-side rendering and API routing. Supabase has been identified as a scalable backend solution providing authentication and secure data storage. Despite these advancements, limited research exists on integrating conversational AI, real-time preview, editable code, and deployment features into a unified website builder. This project addresses this research gap.

## III. PROPOSED SYSTEM

The proposed system is an end-to-end AI-powered website builder that enables users to design, refine, and deploy websites through natural language interaction. Unlike traditional AI builders, each prompt incrementally modifies the existing website instead of regenerating it.

The system provides:

- A conversational prompt interface
- Real-time website preview
- Manual source code editing
- Secure project storage
- Export and deployment support

This approach ensures flexibility, customization, and production-ready output.

## IV. SYSTEM ARCHITECTURE AND IMPLEMENTATION

The system follows a client-server architecture consisting of three major layers:

### 4.1 Frontend Layer

The frontend is developed using Next.js with React. It includes a conversational prompt interface, code editor, and live preview rendered using an iframe. Plain CSS is used for full styling control, while syntax highlighting is implemented using PrismJS.

### 4.2 Backend Layer

The backend uses Next.js API routes to handle AI generation requests, preview sharing, and GitHub export. AI prompts are dynamically constructed using the complete conversation history to ensure consistent refinement.

### 4.3 Database and Authentication Layer

Supabase is used as a Backend-as-a-Service platform providing email/password authentication, PostgreSQL database, and Row Level Security (RLS). Each project is securely mapped to an authenticated user.

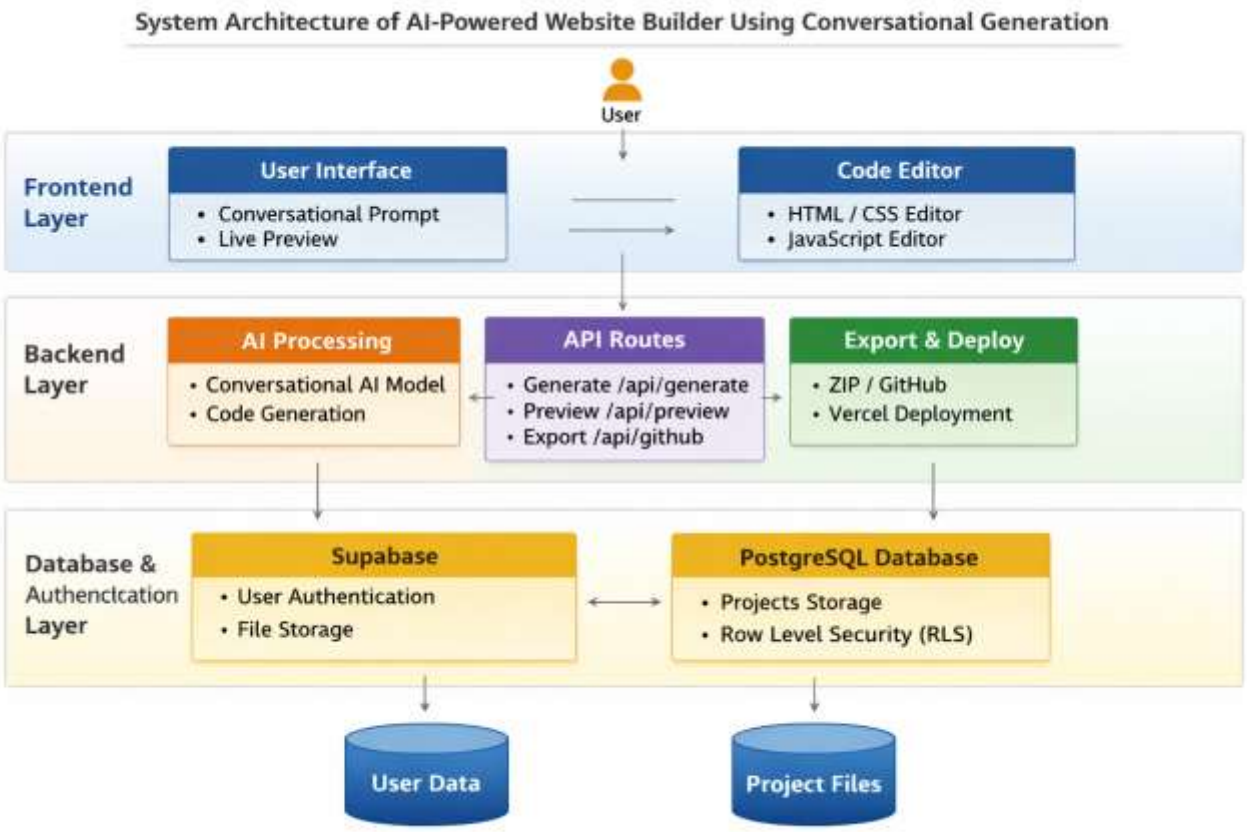



Figure 1. System Architecture of AI Powered Website Generator

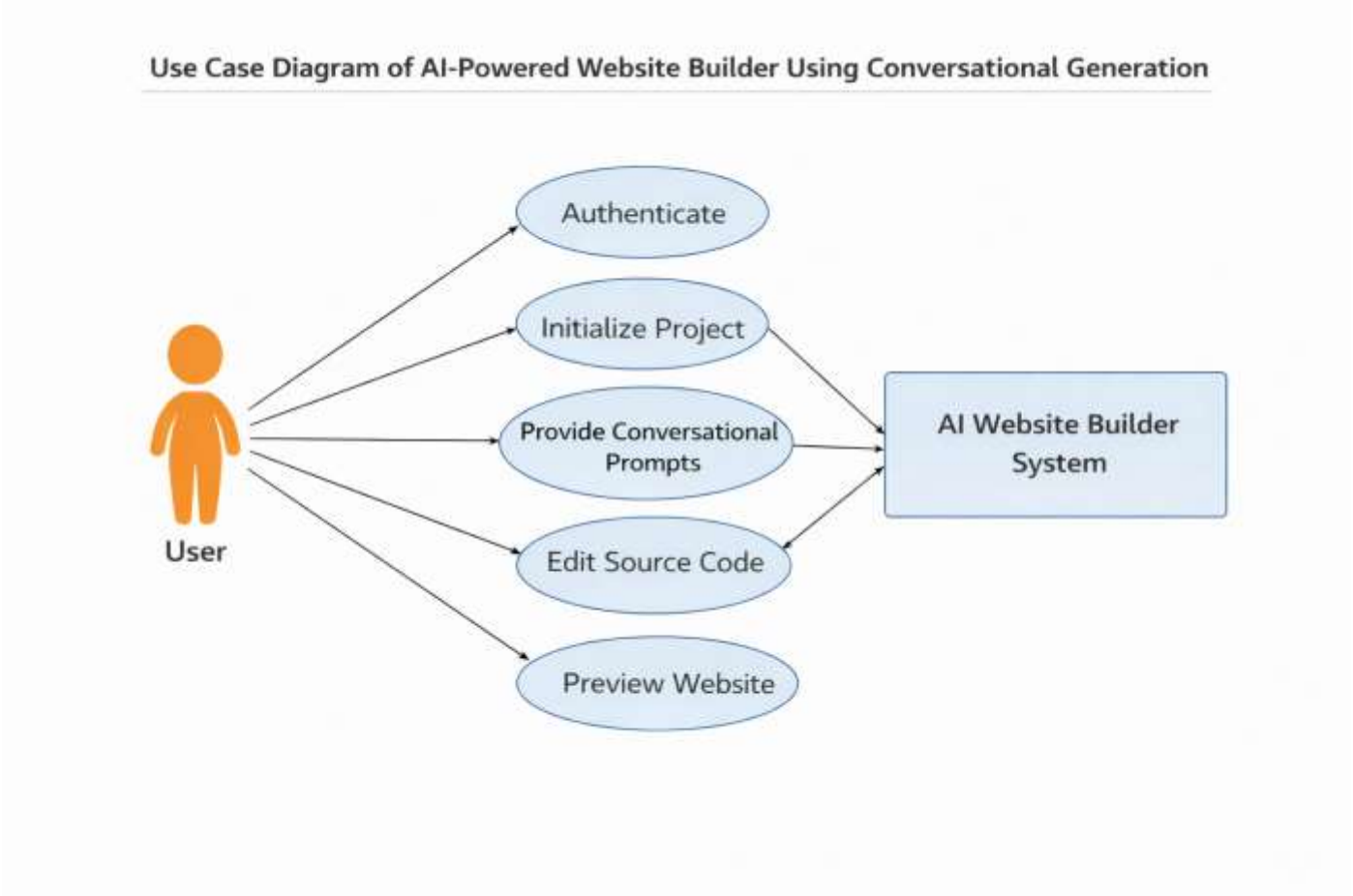



Figure 2. Use Case Diagram of AI Powered Website Generator

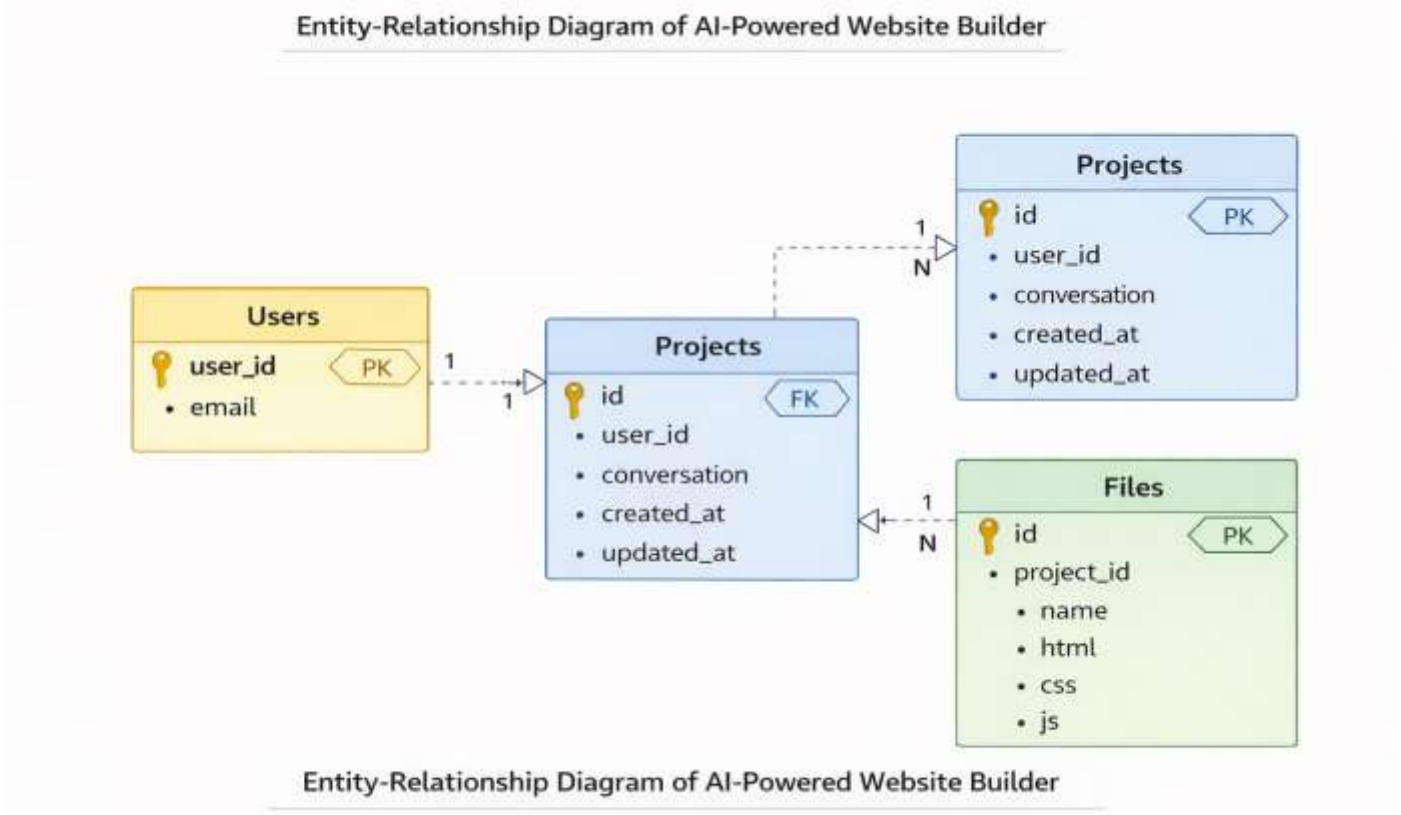
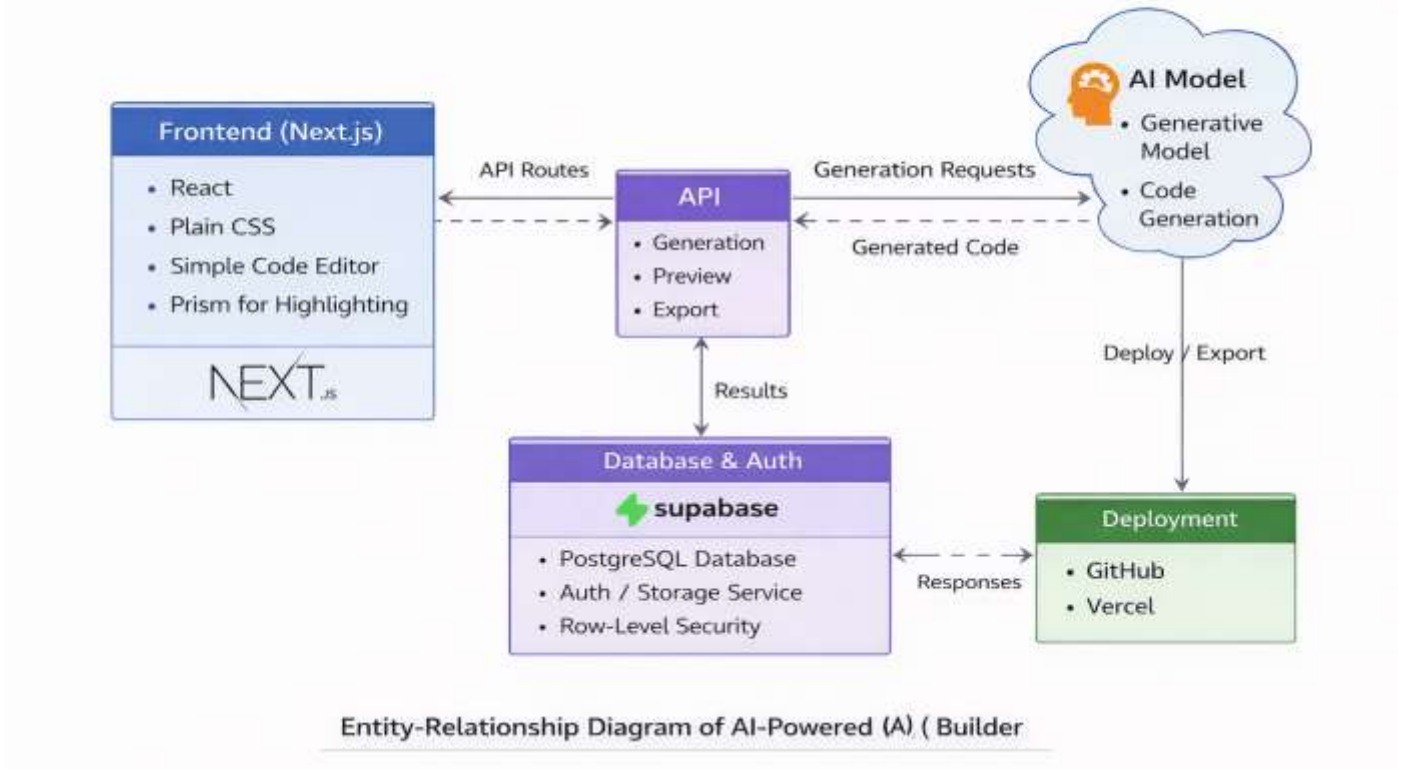



Figure 3. Entity relationship diagram of the proposed system.



## V. RESULT AND OUTPUT ANALYSIS

The system was tested using multiple website categories such as portfolios, landing pages, and blogs. Conversational refinement significantly improved design consistency and reduced regeneration errors. Real-time preview and manual editing allowed precise customization.

The authentication and project persistence mechanisms ensured secure and continuous user sessions. Exported websites were successfully deployed using GitHub and Vercel. Overall, the system demonstrated improved usability, flexibility, and efficiency compared to traditional AI website builders.

## VI. CONCLUSION AND FUTURE SCOPE

This project successfully demonstrates the integration of conversational AI into modern web development workflows. By combining natural language interaction, incremental refinement, live preview, and deployment support, the proposed system bridges the gap between non-technical users and professional developers.

*Future Scope*

- AI-based image generation
- Mobile and tablet preview modes
- Version control for projects
- Team collaboration features
- Backend code generation
- Custom domain deployment

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