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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

PROJECT REPORT ON

AI BASED AUTOMATIC WEBSITE BUILDER

UNDER THE GUIDANCE OF

Prof.S.M.Hattaraki

Submitted by

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CERTIFICATE

This is to certify that the project entitled **"AI BASED AUTOMATIC WEBSITE "** is a bonafide work carried out by bonafide student **Bhoomika Naludi , Lakshmi Khedagi , Rakesh Heralagi** of **BLDEA's V.P. Dr. P G Halakatti College of Engineering and Technology.** This report is submitted in partial fulfillment for the award of Bachelor of Engineering in Electronics and Communication Engineering of the Visvesvaraya Technological University, Belagavi during the year 2025-2026. It is certified that all correction/suggestion indicated for Internal Assessment have been incorporated in the report.

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ABSTRACT

In the era of digital transformation, having an online presence has become a fundamental requirement for individuals and organizations alike. However, developing a website traditionally demands technical expertise, design skills, and considerable time investment. The project titled "AI-Based Automatic Website Builder" addresses this challenge by integrating artificial intelligence and natural language processing to automate the entire web development process. The system enables users to generate complete, multi-page, and responsive websites simply by providing plain-language prompts, thereby eliminating the need for manual coding or professional web design knowledge.

The project demonstrates significant improvements in efficiency, scalability, and inclusivity compared to traditional website creation methods. By merging automation with creative design intelligence, it democratizes the process of web development and empowers users with little or no programming background to establish a digital identity effortlessly. In essence, the AI-Based Automatic Website Builder exemplifies how artificial intelligence can transform conventional software development into an intuitive, conversational, and highly productive experience, marking a vital step toward the future of intelligent digital design.

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CHAPTER I

INTRODUCTION

1.1 Background of the Study

In the digital age, websites have become indispensable for individuals, businesses, institutions, and organizations to establish their online identity. A well-designed website acts as a dynamic interface between an entity and its audience, serving as a powerful medium for communication, marketing, learning, and engagement. Every organization, whether commercial or non-profit, relies on an online presence to share information, attract audiences, and provide services efficiently.

Traditionally, website development is a multifaceted process involving several stages—requirement analysis, content creation, frontend design, backend integration, and deployment. This demands technical expertise in HTML, CSS, JavaScript, and server-side scripting, along with creative design skills. For many small businesses, NGOs, and individuals without a technical background, these requirements pose a significant barrier. Hiring professional web developers is often costly and time-consuming, while learning to code independently can be daunting.

Recent advances in Artificial Intelligence (AI) and Natural Language Processing (NLP) have transformed automation in creative domains. AI systems can now interpret human language, understand design preferences, and generate structured outputs like text, images, and even complete web pages. This capability introduces a revolutionary shift in how websites can be created — automatically, using intelligent systems that interpret user intent from simple textual prompts.

The project "AI-Based Automatic Website Builder" leverages these capabilities to enable users to generate fully functional, multi-page websites by entering plain-language prompts. The system uses the OpenRouter API with the openai/gpt-oss-20b:free model to interpret user instructions and generate complete website code, including content, layout, and images. By integrating advanced AI with a user-friendly frontend, this system aims to make website creation faster, simpler, and more accessible to everyone.

1.2 Motivation and Problem Context

The motivation behind this project stems from the growing demand for quick, low-cost, and automated web development solutions. In today's world, having a website is no longer optional — it's essential for digital visibility. However, despite the availability of several drag-and-drop website builders, most still require manual editing, template adjustments, and content creation. Users without design or coding skills often struggle to produce professional-looking sites.

This challenge is especially evident among NGOs, small enterprises, and educational communities that lack access to skilled developers. They need a simple yet powerful tool that can instantly create customized, multi-page websites tailored to their specific goals — such as awareness campaigns, donation drives, portfolio displays, or event promotions.

AI technology, particularly generative models, offers a solution by combining automation with creativity. The idea is to let the user type, for instance, *"Build a website for a rural women entrepreneur's platform"*, and the system will generate a professional, themed website with relevant images, color schemes, and structured pages — ready for deployment.

Thus, the project's motivation lies in democratizing web development, giving users the freedom to create high-quality websites through natural language interaction rather than manual design.

1.3 Importance of Automated Web Development

Automated website generation represents a paradigm shift in software engineering. It reduces human dependency in repetitive design and coding tasks while ensuring speed, accuracy, and creativity. AI-driven automation also promotes inclusivity by empowering non-technical users to build functional and aesthetically appealing websites independently.

The importance of automation in web development can be summarized as follows:

- Accessibility: Users without any programming knowledge can still create professional websites.
- Time Efficiency: Websites can be built in seconds instead of weeks.
- Cost Reduction: Eliminates the need to hire developers or designers for basic projects.

- Scalability: Multiple websites can be generated for diverse use cases simultaneously.
- Innovation: Encourages creative exploration through AI-generated themes, layouts, and content.

By utilizing AI models capable of understanding human prompts, this project transforms traditional web development into a conversational, interactive process — reducing the skill gap and enabling widespread participation in the digital ecosystem.

1.4 Aim and Objectives

Aim:

To design and develop an AI-Based Automatic Website Builder that automatically generates fully functional, multi-page websites based on user-provided prompts using the OpenRouter API with the openai/gpt-oss-20b:free model.

Objectives:

The specific objectives of this project are as follows:

- To create a user-friendly interface that allows users to enter natural language prompts describing their desired website.
- To integrate the OpenRouter API and AI language model for content and code generation.
- To develop a ready-prompt library featuring pre-defined example prompts for quick website generation.
- To implement a theme customizer allowing users to choose between dark and light themes with color variations.
- To ensure multi-page website generation (minimum five pages) with navigation and responsive layouts.
- To provide a preview panel displaying the generated website before download.
- To enable downloading the generated website as a ZIP file containing HTML, CSS, and JavaScript code.
- To ensure contextually relevant content and imagery using APIs like Unsplash or DALL·E for visuals.
- To enhance automation, reliability, and customization for real-world usability.

1.5 Scope of the Project

The scope of this project extends across multiple domains, including AI-driven automation, frontend web technologies, and user experience design. It is designed not only for students and developers but also for organizations that need instant, cost-effective websites.

The project's functionality covers:

- AI Content Generation: Automatic production of text, structure, and design using natural language input.
- Multi-Page Web Output: Generation of at least five interlinked pages such as Home, About, Services, Gallery, and Contact.
- Theme Selection: Ability to toggle between dark and light modes with multiple color options.
- Preview and Download: Instant website preview and downloadable source code.
- Ready-to-Use Prompts: Fifteen prebuilt themes like NGOs, fundraising, and portfolio websites.
- Integration with Unsplash/DALL·E: To automatically generate or fetch suitable images.

The system is scalable, allowing future integration with advanced models, voice-based prompts, SEO optimization, and auto-deployment on hosting platforms. The current version emphasizes usability, quick generation, and high-quality code export suitable for educational, business, and social purposes.

CHAPTER II

LITERATURE SURVEY

2.1 Overview of Existing Systems

The digital transformation of the modern world has created an ever-increasing demand for websites. Traditional web development involves manual coding and design, typically carried out by skilled developers who write HTML, CSS, JavaScript, and backend scripts. However, over the past decade, multiple frameworks and tools have emerged to simplify this process — such as WordPress, Wix, Squarespace, and Webflow.

These platforms introduced template-based web development, allowing users to select from prebuilt layouts and customize content. Although these systems made web creation more accessible, they still depend heavily on user interaction and design knowledge. Users must manually adjust templates, insert images, and modify styles to achieve the desired appearance.

In recent years, AI-based website builders have attempted to bridge this gap by offering automatic design and content generation. Systems like Bookmark's AIDA, Zyro, and Durable AI Website Builder use algorithms to propose layouts based on user inputs, but they remain limited in flexibility and contextual understanding. Most rely on fixed rule-based systems rather than deep learning or natural language models.

The emergence of large language models (LLMs) such as GPT and similar transformer architectures has revolutionized this domain. These models can interpret human language prompts, understand semantic context, and produce structured, creative outputs. The project presented in this report capitalizes on these advancements, integrating OpenRouter's GPT-based model to dynamically generate websites from textual descriptions, thereby surpassing the constraints of existing systems.

2.2 Comparative Study of AI-Powered Website Builders

The field of AI-assisted website creation has evolved through a variety of approaches, each offering different degrees of automation, flexibility, and quality. The table below conceptually compares the most widely known systems with the proposed AI-Based Automatic Website Builder.

This comparison clearly indicates that while existing systems are optimized for ease of use, they are constrained by predefined templates. The proposed system uniquely stands out by dynamically generating multi-page websites with contextual text, appropriate imagery, and navigation — all inferred from a natural-language prompt.

System	Core Technology	Automation Level	Customization	AI Integration	Limitations
Wix ADI (Artificial Design Intelligence)	Rule-based and template matching	Medium	High (manual)	Basic	Limited contextual understanding
Bookmark AIDA	Pre-trained models with pattern-based AI	High	Medium	Moderate	Template-oriented, lacks creativity
Durable AI Builder	Proprietary NLP engine	High	Medium	Strong	Subscription-based, limited free use
Zyro Builder	AI + prebuilt layout modules	Medium	High	Limited	Generates text, not structural code
Webflow AI Assistant	AI-assisted layout generator	Medium	High	Moderate	Requires design expertise
Proposed System	OpenRouter GPT Model (openai/gpt-oss-20b:free)	Very High	Dynamic	Deep learning with NLP	May depend on API limits and network access

2.3 Limitations of Current Systems

Despite their innovations, most current AI-based website builders have significant limitations:

- Template Dependency: Many existing builders generate sites by filling predefined templates rather than creating unique structures. This results in repetitive layouts and limited creativity.
- Partial Automation: The process often stops at generating a single-page prototype or layout suggestion. Users must manually edit, expand, or connect pages.
- Weak Contextual Understanding: The AI models in existing builders are not advanced NLP models; they can misinterpret complex instructions or fail to understand thematic requirements.
- Limited Multi-Page Generation: Few platforms can automatically generate fully linked, multi-page sites with coherent navigation.
- Restricted Image Generation: While some provide image suggestions, most lack automated integration of contextually relevant visuals from APIs
- Closed Ecosystems: Proprietary systems like Wix or Durable limit user access to generated code, preventing portability or customization beyond their platform.
- High Subscription Costs: Most advanced AI website builders are commercial products, limiting free access for educational or social causes.

The proposed system addresses these shortcomings through full code generation, contextual content integration, open API usage, and free accessibility. It ensures both creative freedom and technical completeness in a single workflow.

2.4 Research Gap

An in-depth survey of the literature and existing tools reveals a clear research gap in automated, AI-driven, end-to-end web development. Although AI and NLP have made significant progress, very few systems fully utilize them to generate websites directly from user prompts.

Key gaps identified include:

- Absence of Direct Code Generation: Most existing tools focus on design suggestions rather than generating executable HTML, CSS, and JavaScript code.

- Limited Understanding of Contextual Prompts: Few AI systems can produce content tailored to specific themes, such as “tree plantation campaign” or “mental health awareness.”
- Minimal Customization of Aesthetic Themes: Current builders rarely allow users to choose dark/light themes or adjust color palettes dynamically.
- Lack of Educational and Social Focus: Most tools target businesses; there is minimal support for NGOs, students, and community organizations.
- No Open-Source or Downloadable Output: Systems often restrict code access, limiting transparency and reuse.

By filling these gaps, the proposed project positions itself as a research-oriented, practical innovation combining deep learning, NLP, and web technology to deliver a complete automatic website generation pipeline.

This chapter reviewed the landscape of existing AI-powered website builders and their limitations. Traditional website creation remains labor-intensive, while current AI-based systems offer only partial automation through templates.

The AI-Based Automatic Website Builder distinguishes itself by introducing a fully generative approach using the OpenRouter API with the GPT-OSS-20B model, capable of creating multi-page, fully functional websites from natural-language prompts. The inclusion of a theme customizer, prompt library, and code download feature enhances usability and transparency.

Thus, this project not only contributes to technological advancement in AI-driven software automation but also aligns with global trends toward accessibility, digital empowerment, and intelligent design.

CHAPTER III

SYSTEM DESIGN & METHODOLOGY

3.1 Overview of the Proposed System

The AI-Based Automatic Website Builder is an intelligent, end-to-end platform designed to automatically generate complete, multi-page websites based on simple natural-language prompts. It seamlessly integrates Artificial Intelligence (AI), Natural Language Processing (NLP), and modern Web Development Technologies to transform user ideas into functional, aesthetically appealing, and deployable websites with minimal human intervention.

The primary objective of this system is to democratize website creation by enabling users including non-technical individuals, small business owners, educators, and NGOs to establish an online presence quickly and effortlessly. Instead of manually writing code or hiring web developers, users simply describe their requirements in natural language, and the system automatically generates a ready-to-use website.

The proposed system operates through three major functional phases:

1.Prompt Interpretation

- The process begins when the user inputs a natural-language prompt (e.g., "Create a website for a climate awareness campaign" or "Build an e-commerce website for handmade crafts").
- This prompt is analyzed using Natural Language Processing (NLP) techniques to extract relevant keywords, entities, and intent.
- The system identifies the website's purpose, tone, structure, and content requirements — such as the number of pages, type of content, and design style.

2.Content & Code Generation

- The interpreted data is sent to the OpenRouter API, powered by the openai/gpt-oss-20b:free large language model.
- This model intelligently generates the corresponding HTML, CSS, and JavaScript code for each section of the website.
- It also produces textual content such as headings, paragraphs, slogans, and descriptions that match the theme and purpose of the prompt.
- The system ensures the generated content is contextually accurate, semantically meaningful, and stylistically coherent.

3.Website Assembly & Preview

- After generation, the system automatically compiles all web page components into a structured multi-page website.
- Users can preview the result directly through the web interface, exploring each page and testing interactivity.
- Finally, the complete website package can be downloaded as a ZIP file, ready for deployment or further customization.

This modular workflow provides both dynamic adaptability and scalability, ensuring that the system can handle a wide variety of website types — from portfolios and educational sites to campaigns and product showcases. By reducing technical barriers, the AI-Based Automatic Website Builder empowers users to create professional-quality websites in a matter of minutes.

3.2 System Architecture

The proposed system follows a client–server architecture, structured into three primary layers: the User Interface Layer (Frontend), the Application Logic Layer (Backend), and the Data & Output Layer. Each layer plays a distinct role in ensuring smooth interaction, efficient processing, and reliable output delivery.

1. User Interface Layer (Frontend)

This layer is responsible for the interaction between the user and the system. It provides an intuitive, responsive, and visually appealing interface designed with HTML, CSS, and JavaScript — or modern frameworks like React for better interactivity and scalability.

Key components include:

- Prompt Input Box: Allows users to enter descriptive natural-language commands to specify the desired website type.
- Predefined Prompt Cards: Offer ready-made prompt suggestions to help users get started quickly.
- “Generate Website” Button: Initiates the AI-driven website generation process.
- Theme Customization Options: Enable users to modify color schemes, fonts, and layout preferences before generation.
- Preview & Code Panel: Displays the generated website for real-time inspection, along with an option to view or copy the underlying code.

This layer focuses on providing a seamless user experience with minimal complexity, guiding users smoothly from input to final website generation.

2. Application Logic Layer (Backend)

The backend serves as the core processing unit of the system. It manages all logic, communication, and data processing between the frontend interface and the AI model hosted via OpenRouter API.

Major responsibilities include:

- Prompt Processing & Routing: Receives the user's input from the frontend and structures it into a request suitable for the AI model.
- API Communication: Sends the structured prompt to the openai/gpt-oss-20b:free model for processing and retrieves the generated content and code.
- Response Structuring: Parses the AI's response into logical web components (e.g., navigation bar, footer, content sections).
- Error Handling & Optimization: Ensures system stability by handling network errors, malformed responses, and timeout issues gracefully.
- Integration Management: Facilitates access to external APIs (such as Unsplash API) for fetching relevant images that complement the generated text and theme.

This layer essentially acts as the brain of the system, ensuring that all AI responses are meaningfully transformed into functional website structures.

3. Data & Output Layer

The Data & Output Layer is responsible for storage, organization, and export of generated website files.

Its main functions include:

- Temporary File Management: Stores generated HTML, CSS, JavaScript, and image assets temporarily during the creation process.
- Website Folder Assembly: Organizes all generated files into a coherent directory structure, representing a complete multi-page website.
- ZIP File Generation: Packages the final website into a downloadable ZIP archive for user convenience.
- Image Retrieval & Management: Integrates with image APIs such as Unsplash to automatically insert thematic visuals based on the prompt context.
- Output Delivery: Ensures efficient file streaming for preview and download operations.

This layer focuses on ensuring data integrity, output consistency, and user accessibility, providing a professional and ready-to-deploy website at the end of the process.

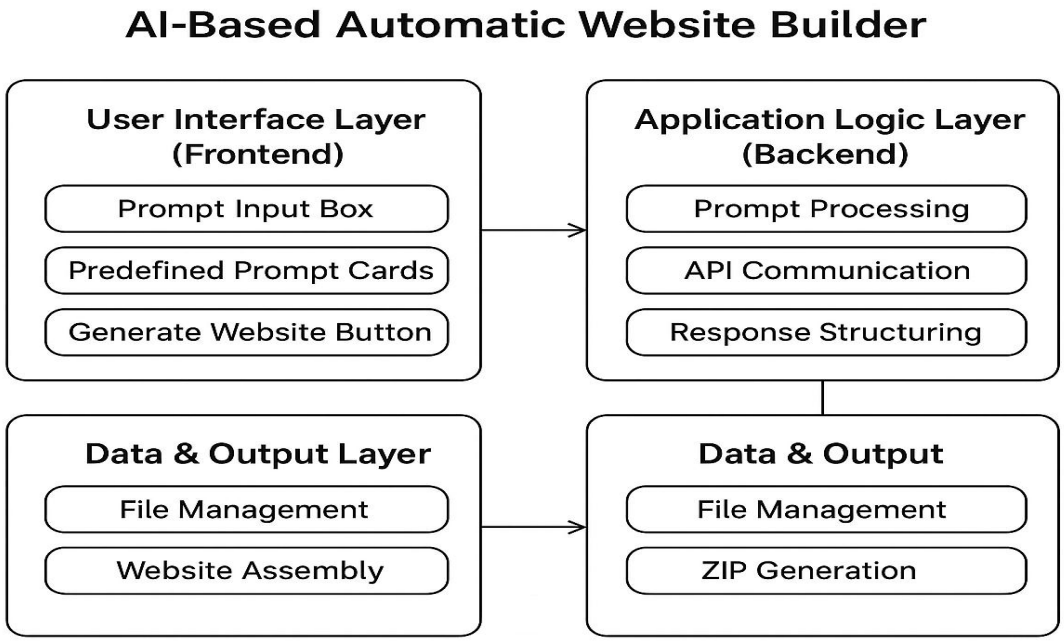


Figure 3.1:System Overview

3.3 Functional Workflow

The system workflow can be described in six primary functional stages:

- User Input Acquisition: The user provides a textual prompt or selects one of the ready-made examples.
- Theme Customization: User selects between dark or light theme and a preferred color palette.
- AI Request Processing: The backend sends the prompt to OpenRouter's API, invoking the GPT model.
- Content and Code Generation: The model returns structured HTML, CSS, JS code and textual content.
- Website Rendering and Preview: The frontend dynamically displays the generated website in a preview panel.
- Download Option: The user can download the generated website as a ZIP file containing all assets.

This workflow ensures that the system is interactive, scalable, and responsive to user input.

3.4 Detailed Module Description

1. Input & Prompt Handling Module

Captures the user's text or selection. Includes prompt validation (checking length, keywords, and structure).

2. API Communication Module

Uses asynchronous calls (fetch/axios) to communicate with OpenRouter API. It handles authentication, response parsing, and timeout management.

3. Website Generator Module

Processes the AI output, splits it into multi-page structures, and ensures proper linkage between pages (Home, About, Gallery, Contact, etc.).

4. Theme Customizer Module

Implements user-selected color themes and stores preferences using local storage or session memory.

5. Preview & Code Display Module

Renders the generated website in an iframe or dedicated preview window. Allows toggling between visual view and code view.

6. ZIP Builder Module

Combines all generated HTML, CSS, and JS files into a downloadable ZIP file using JavaScript libraries such as JSZip.

7. Error Handling Module

Displays friendly error messages for API failures or invalid prompts, ensuring smooth user experience.

3.5 API Integration (OpenRouter API with openai/gpt-oss-20b:free Model)

The OpenRouter API acts as the communication bridge between the system and the AI model. The model openai/gpt-oss-20b:free is capable of generating human-like text and structured outputs.

Integration steps include:

API Key Authentication: The backend uses secure tokens to access OpenRouter endpoints.

Prompt Submission: The system formats user prompts into structured JSON queries.

Response Parsing: The AI response is filtered to extract valid code segments and content.

Post-Processing: HTML, CSS, and JS snippets are assembled into files and formatted for readability.

This integration allows the system to produce context-specific websites without hard-coded templates.

3.6 Theme Customizer Module

The Theme Customizer provides personalization by allowing users to switch between:

Dark Theme: A dark purple–blue gradient background for aesthetic modern appeal.

Light Theme: A clean, minimal layout suitable for business or educational sites.

Users can also choose from pre-defined color palettes (e.g., teal, orange, green). The customizer dynamically applies the chosen styles using CSS variables. Preferences can be stored for subsequent sessions.

3.7 UI/UX Flow

The system's User Interface emphasizes simplicity and engagement:

Landing Page: Features a dark purple-blue gradient with a centered message box and "Generate Website" button.

Prompt Section: Includes both a free-form text box and ready-made prompt cards (15 predefined examples).

Toggle Panel: "Use Ready Prompts" vs. "Enter Your Own Prompt."

Theme Customizer: Toggle between themes and color schemes.

Preview Panel: Displays the generated website in real-time.

Code View & Download Panel: Enables switching between preview and source code, with a download ZIP option.

The user journey follows a guided, minimal-effort design philosophy.

3.8 System Flowchart

The system flowchart describes step-by-step execution:

1. Start

The process begins when the user launches the website generation system.

2. User Inputs PromptThe user enters a text prompt (or project idea) describing the kind of website they want.

This could include keywords like "restaurant website," "portfolio," or "tech blog."

3. Validate Prompt

The system checks the user's input for validity:

Ensures the prompt isn't empty.

Checks for disallowed or malformed inputs.

4. Error: Invalid Prompt (Yes branch)

If the prompt is invalid, the system displays an error message — "Invalid Prompt."

The user must re-enter a valid prompt to continue.

5. Send Request to OpenRouter API

If the prompt is valid, the system sends it to the OpenRouter API.

The API processes the prompt using an AI model to generate HTML, CSS, and JS code for the website.

6. API Error?

The system checks whether the API request was successful.

If there's any issue (network failure, bad response, timeout, etc.), it triggers an error path.

7. Error: API Communication Failed (No branch)

When communication with the API fails, the system shows an error message:

"API Communication Failed."

The user may retry after checking the internet connection or prompt format.

8. Receive Generated Code

If the API works correctly, the system receives AI-generated website code (HTML/CSS/JS).

This code is stored temporarily for rendering and preview.

9. Parse and Assemble Multi-Page Website

The system organizes the received code into a structured website project, possibly with:

Multiple pages (Home, About, Contact, etc.)

Linked assets (CSS, images, scripts).

10. Render Preview

The system renders a live preview of the generated website in the browser.

Users can view and test the generated layout before downloading.

11. Offer ZIP Download

After previewing, the system offers an option to download the entire website as a ZIP file.

This includes all the generated files and assets for offline use or deployment.

12. End

The process completes once the user finishes previewing or downloading the site.

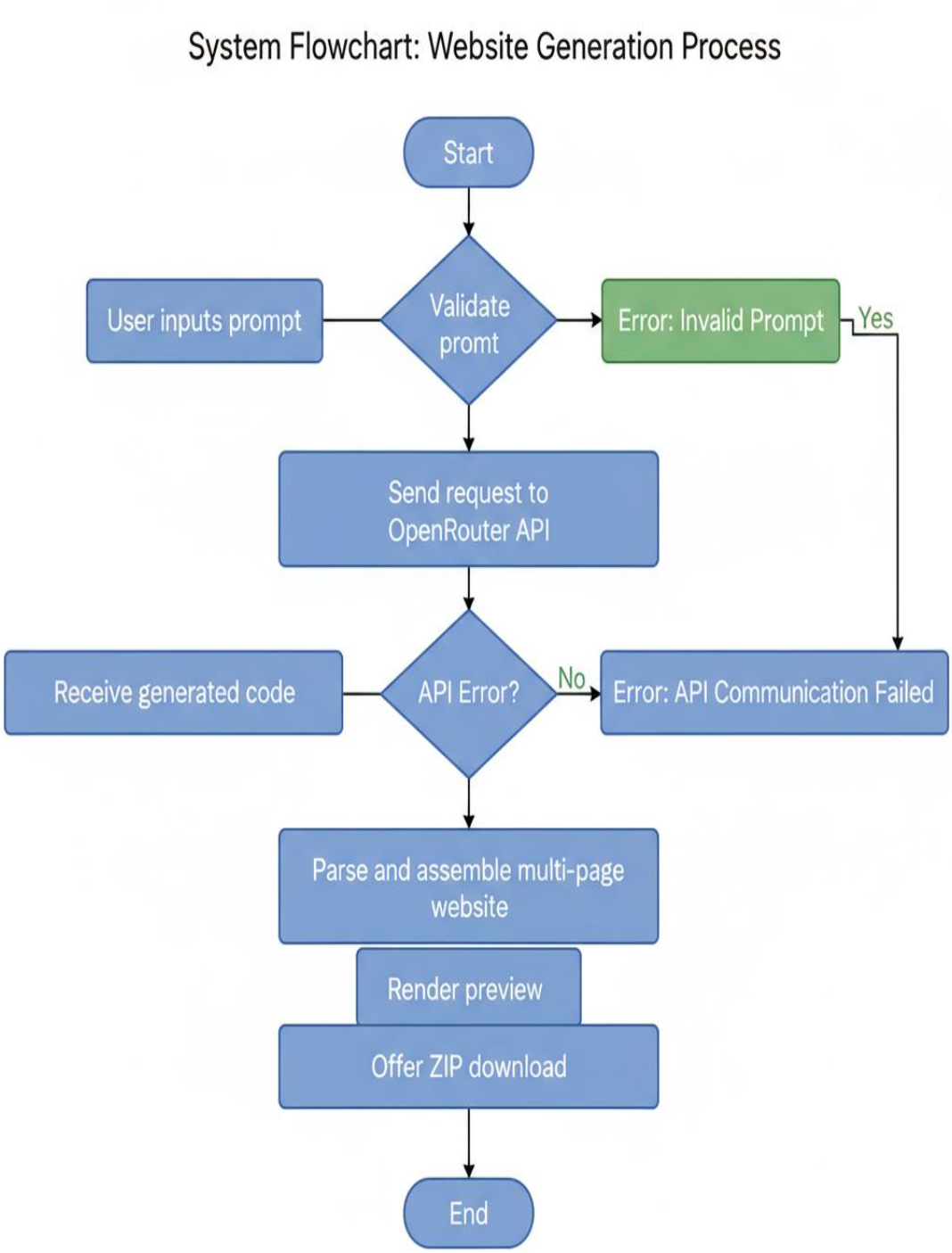
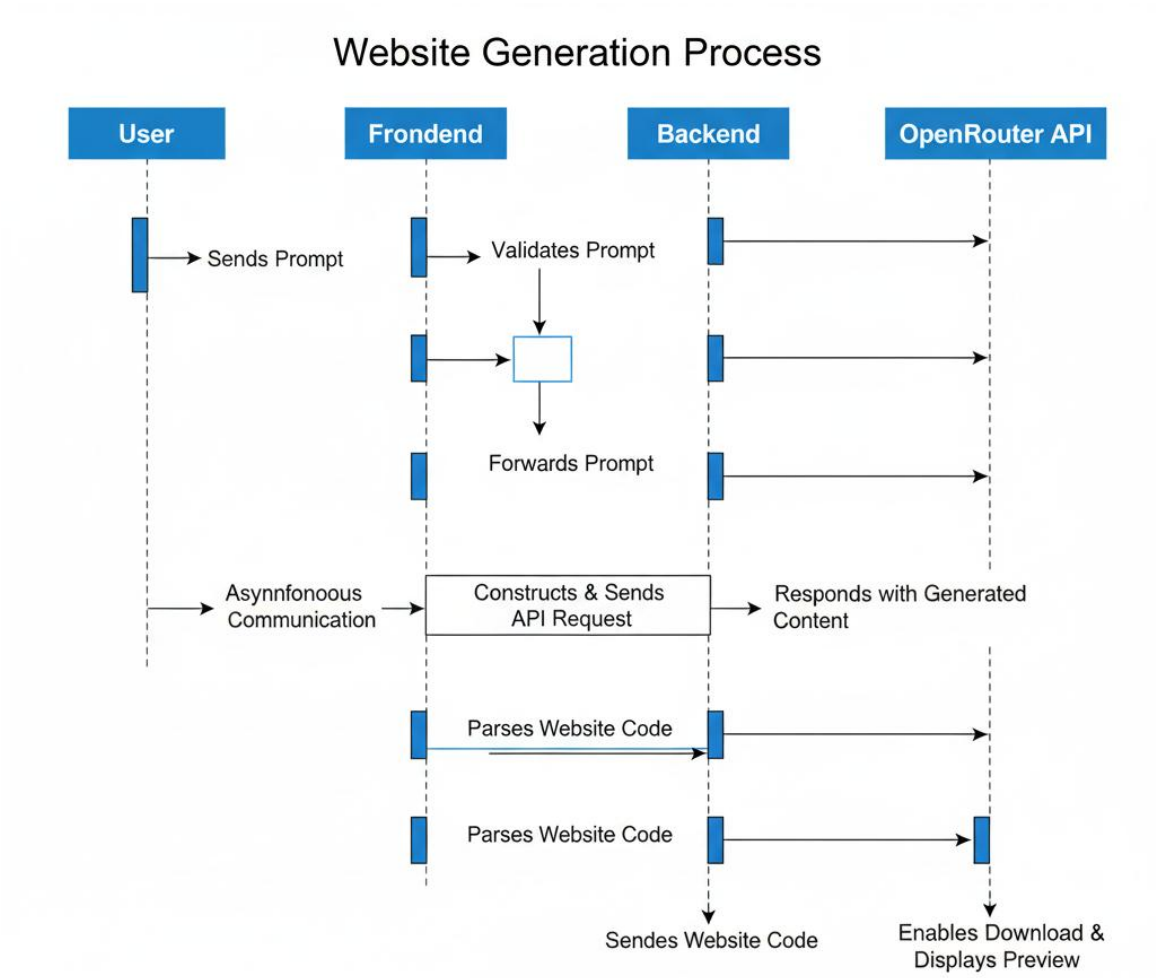


Figure 3.2 :System Flowchart

3.9 Sequence Diagram



User Sends Prompt

- The user enters a text prompt describing the desired website and submits it to the frontend.

Frontend Validates Prompt

- The frontend checks whether the entered prompt is valid (not empty or malformed).
- If valid, it forwards the prompt to the backend.

Backend Forwards Prompt

- The backend receives the validated prompt and prepares it for API processing.

Constructs & Sends API Request

- The backend constructs a properly formatted API request and sends it to the **OpenRouter API** asynchronously.

OpenRouter API Responds

- The OpenRouter API processes the request and responds with **AI-generated website code** (HTML, CSS, JS).

Backend Parses Website Code

- The backend receives the response and parses the generated code into a structured website format.

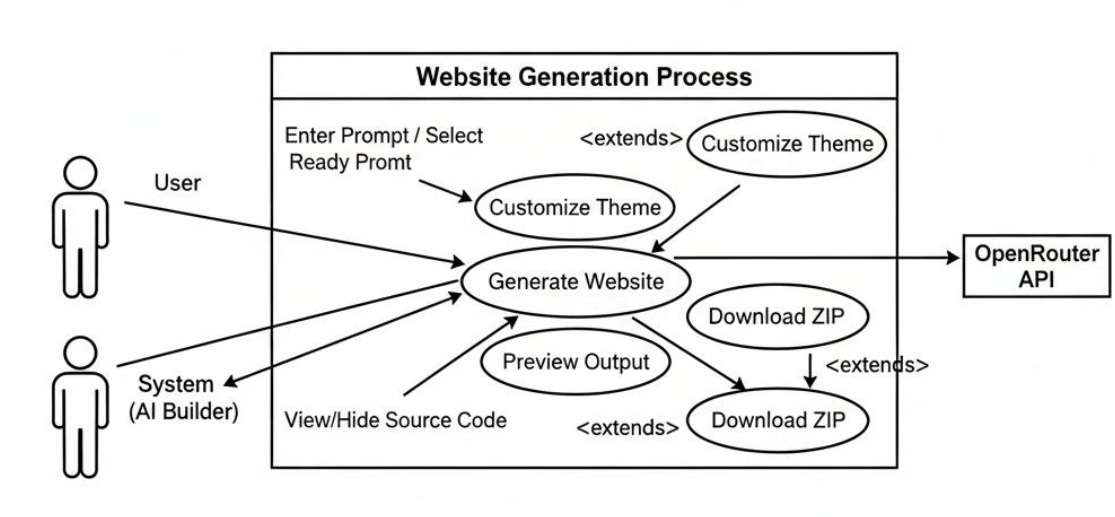
Frontend Displays Preview & Download Option

- The parsed website code is sent back to the frontend, which displays a live preview and enables a **ZIP download** for the user.

Note:

Asynchronous communication between the frontend, backend, and API **minimizes latency** and improves the overall user experience.

3.10 Use Case Diagram



Actors

User: Provides input prompts, selects ready prompts, customizes themes, and downloads the final website.

System (AI Builder): Processes user input, generates websites, and interacts with the OpenRouter API.

OpenRouter API: Supplies AI-generated website content based on prompts.

Main Use Cases

Enter Prompt / Select Ready Prompt: User starts the process by providing input.

Customize Theme: User modifies layout or color themes before generation.

Generate Website: Core function where the AI Builder processes prompts and interacts with the API.

Preview Output: User views the generated website.

Download ZIP: User downloads the website files.

View/Hide Source Code: Allows toggling between viewing or hiding the website code.

Relationships

"Generate Website" extends from **"Enter Prompt"** and **"Customize Theme."**

"Download ZIP" extends from **"Preview Output."**

3.11 Technology Stack

Component	Technology Used
Frontend	HTML5, CSS3, JavaScript (or React.js)
Backend	Node.js, Express.js
API Integration	OpenRouter API (openai/gpt-oss-20b:free)
UI Design Tools	Tailwind CSS / Bootstrap
Image Sources	Unsplash API, DALL·E
Code Packaging	JSZip, FileSaver.js
Version Control	Git & GitHub
IDE/Editor	Visual Studio Code

The **frontend** of the *AI-Based Automatic Website Builder* is developed using **HTML5, CSS3, and JavaScript (or React.js)**. These technologies are responsible for the system's visual design, responsiveness, and user interactivity. HTML5 provides the structural foundation for the web interface, defining elements such as the input box, prompt cards, and preview panel. CSS3 ensures the user interface is aesthetically pleasing and aligned with the project's theme — particularly the dark purple and blue gradient and light theme variations. JavaScript (or React.js, if implemented) brings interactivity, handling dynamic updates such as showing or hiding the code preview, changing themes, and rendering the generated website in real time.

The **backend** is powered by **Node.js and Express.js**, which handle all server-side operations and manage communication between the frontend and the AI model through API requests. Node.js offers a fast, asynchronous runtime environment ideal for handling multiple user requests simultaneously. Express.js simplifies routing and

middleware management, enabling the backend to process prompts, send them to the AI model via the OpenRouter API, receive the generated code, and prepare it for rendering or download. This ensures smooth and reliable data flow throughout the system.

For **API integration**, the system uses the **OpenRouter API** with the **openai/gpt-oss-20b:free** model. This component is the intelligence engine of the entire application. When a user provides a prompt — for example, "Create a website for a blood donation drive" — the backend sends this input to the OpenRouter API, which interacts with the AI model to generate contextually relevant website code. The returned response includes HTML, CSS, and JavaScript along with textual content and layout suggestions, which are then assembled into a complete multi-page website.

To ensure visually appealing and responsive layouts, the project utilizes **Tailwind CSS** or **Bootstrap** as **UI design tools**. These frameworks simplify the process of designing consistent interfaces by offering pre-built components, grid systems, and utility classes. They help maintain alignment, spacing, and adaptive design across various devices, making the website builder interface both attractive and user-friendly.

For sourcing images, the project integrates the **Unsplash API** and **DALL·E**. These services automatically fetch or generate images based on the website's theme or content. For example, if the prompt is related to a "tree plantation campaign," Unsplash retrieves relevant nature images, enhancing visual consistency and contextual relevance without requiring manual uploads.

The **code packaging** process is handled using **JSZip** and **FileSaver.js** libraries. These tools are essential for bundling all generated website files — including HTML, CSS, JS, and images — into a single downloadable ZIP file. This allows users to save and deploy the generated website easily on their own hosting platforms or local machines.

Version control and collaboration are managed through **Git and GitHub**. Git ensures efficient tracking of code changes, while GitHub provides a cloud-based platform for storing, sharing, and updating the project source code. This setup also enables easy maintenance, teamwork, and version management throughout development.

Finally, the preferred development environment for the project is **Visual Studio Code (VS Code)**. It serves as the integrated development environment (IDE) where all coding, testing, and debugging take place. VS Code's extensions for JavaScript, Node.js, and API testing streamline the development process, making it easier to

manage the integration of frontend, backend, and AI components within a single workspace.

This chapter provided a comprehensive overview of the system's architectural design, functional modules, and technological framework. The methodology clearly defines how the AI-based automatic website builder interprets user prompts, generates multi-page websites, and delivers them as downloadable code. The structured workflow, modular design, and integration of OpenRouter's AI model ensure that the system is both scalable and adaptive to diverse user needs.

CHAPTER IV

IMPLEMENTATION

4.1 Frontend Development

The frontend interface of the AI-Based Automatic Website Builder is designed to provide a modern, responsive, and interactive user experience. It serves as the medium through which users interact with the system, input prompts, select themes, view generated websites, and download code.

The frontend is implemented using HTML5, CSS3, and JavaScript, with enhancement through React.js for component-based rendering. The visual design adopts a dark purple and blue gradient theme as the default, reflecting an elegant and futuristic aesthetic aligned with the AI-driven nature of the system.

Key Components of the Frontend:

Landing Page:

- Displays the project title and description.
- Contains the message box for prompt entry.
- Includes “Generate Website” and “Clear” buttons.

The landing page is built using HTML5 for structure and styled with CSS3 gradient backgrounds. React components or JavaScript functions handle dynamic text rendering and button interactions, linking the input field to the backend API call.

Prompt Section:

- Divided into two options:

Use Ready-to-Use Prompts: Displays pre-designed prompt cards (e.g., Disaster Relief, Women Entrepreneurs, Climate Awareness).

- Enter Custom Prompt:

Allows the user to type a personalized request.

Implemented with reusable React components or JavaScript event listeners, this section captures user input or ready-made prompts. Each pre-designed prompt card triggers an event that auto-fills the input field and initiates website generation.

Preview and Code Panels:

Real-time preview of the generated website using an embedded iframe.

“Show/Hide Code” toggle to view the generated HTML, CSS, and JavaScript.

The preview panel uses an <iframe> element to dynamically render the generated website without page reloads. A JavaScript toggle function switches between visual preview and syntax-highlighted code view using conditional rendering.

Theme Customizer:

Switch between Dark and Light modes.

Choose accent colors such as teal, green, or orange.

Theme selection is managed through React hooks or JavaScript event listeners. CSS variables are updated dynamically, and user preferences are stored in local storage to persist across sessions.

Download Button:

Generates a ZIP file containing all website files.

On the frontend, the **Download Button** is implemented using **React.js** to handle user interaction and file packaging. When the user clicks the button, an event listener triggers a function that collects the generated HTML, CSS, and JavaScript code from the preview panel. The **JSZip** library is used to compress these files into a ZIP archive directly in the browser, and **FileSaver.js** enables the client-side download without any server processing. This ensures a fast, secure, and seamless download experience within the user's browser.

The frontend uses responsive grid layouts and media queries to ensure the system works seamlessly on desktops, tablets, and mobile devices. Libraries like Tailwind CSS and Bootstrap may be used to accelerate UI development.

4.2 Backend API Handling (Node.js/Express Integration with OpenRouter)

The backend is responsible for processing user input, communicating with the OpenRouter API, and assembling the AI-generated content into usable website files.

It is built using Node.js and Express.js, providing asynchronous request handling and efficient performance.

Key Backend Functionalities:

API Request Construction:

The backend formulates structured requests containing the user's prompt, theme selection, and model parameters before sending them to the OpenRouter API endpoint.

Response Parsing:

The AI model returns a structured text response that includes HTML, CSS, and JavaScript segments. The backend parses these into separate files.

File System Handling:

Temporary storage mechanisms (using Node's fs module) are used to organize the output into folders before compression.

Error Management:

If the API request fails or exceeds token limits, the backend provides meaningful error feedback to the frontend.

Security:

API keys are stored securely in environment variables, ensuring that sensitive credentials are not exposed.

This modular backend architecture ensures smooth, fast, and reliable communication with the AI model.

4.3 Prompt Handling and Website Generation Logic

At the heart of the system lies the prompt-to-website pipeline. The user's natural-language prompt serves as the instruction that guides the AI model in generating both content and structure.

Steps in the Generation Process:

Prompt Validation:

The input is checked for completeness and relevance (e.g., empty or short prompts are rejected).

API Invocation:

The validated prompt is sent to the OpenRouter endpoint with appropriate model parameters.

AI Response Processing:

The system parses the AI output to identify:

- HTML body and page layout
- CSS style definitions
- JavaScript interactions

Multi-Page Assembly:

The code is distributed into multiple files (e.g., index.html, about.html, contact.html) and linked through navigation menus.

Preview Rendering:

The assembled code is sent back to the frontend for real-time preview in the embedded viewer.

This process ensures that each website reflects the user's intent with contextually appropriate content and structure.

4.4 Handling Ready-to-Use Prompts

Below the message box, the system displays a curated panel of 15 predefined prompts, such as:

"A site for disaster relief donations"

"A site for rural women entrepreneurs to showcase products"

"A site for community health awareness"

Each prompt is placed within a clickable card or button. When the user selects one, the corresponding text automatically populates the input box.

Upon pressing the Generate Website button, the process follows the same AI-driven pipeline used for custom prompts.

This feature helps users unfamiliar with prompt crafting to experience the system's full functionality quickly.

4.5 Theme Customizer Functionality (Light/Dark Toggle, Color Palettes)

The Theme Customizer is a dynamic feature allowing users to personalize their generated websites visually.

Functional Details:

Users can toggle between Light and Dark modes.

A color picker or set of predefined accent colors allows selection of tones like teal, gold, or violet.

The system dynamically modifies the CSS variables, updating color palettes in real-time without reloading the page.

The selected theme is applied consistently across all generated pages using shared CSS templates.

Technical Implementation:

The Theme Customizer is implemented using React hooks or standard JavaScript event listeners to provide dynamic theme switching between dark and light modes. In the React version, the useState hook manages the current theme, while the useEffect

hook listens for changes and updates CSS variables to apply the selected color scheme instantly. In the JavaScript version, event listeners detect user actions on the theme toggle and conditionally apply CSS classes (e.g., “dark-mode” or “light-mode”) to the root element, ensuring consistent styling across all components.

To maintain a personalized experience, the selected theme and color preferences are stored in the browser’s local storage. This allows the system to automatically restore the user’s previous settings on subsequent visits without additional input. The use of CSS variables enables smooth transitions and efficient updates without reloading the page, resulting in a fast, responsive, and user-friendly interface that enhances the overall usability of the AI-Based Automatic Website Builder.

4.6 Multi-Page Generation

Unlike simple single-page generators, this system ensures multi-page website creation. For each prompt, the AI is instructed to generate at least five logically connected pages — such as:

Home Page: General overview and hero section.

About Page: Describes mission, objectives, or background.

Services/Programs Page: Lists offerings, initiatives, or campaigns.

Gallery/Projects Page: Displays images from Unsplash or placeholders.

Contact Page: Contains forms, social media links, and map integration.

All pages are linked through a common navigation bar and share consistent design themes. The code ensures relative linking (href="./about.html") for offline functionality.

4.7 Integration of Unsplash/DALL·E for Image Generation

Visual appeal enhances engagement, and this system integrates image sourcing through the Unsplash API or optional DALL·E model integration.

Features:

Fetches relevant images dynamically based on prompt keywords (e.g., “trees,” “donation,” “education”).

Embeds images using <img> tags with proper alt text.

Includes responsive design to ensure mobile-friendly galleries.

Example request:

https://api.unsplash.com/photos/random?query=tree-plantation&client_id=ACCESS_KEY

This makes each generated website contextually rich and visually consistent with the prompt.

4.8 Code Preview and ZIP Download Mechanism

A critical feature is the code preview and download option. After the AI generates all necessary files:

The frontend displays the website in a preview window.

A "Show Code" toggle reveals the raw HTML, CSS, and JS.

The JSZip library compresses these files into a single .zip.

The user clicks "Download Code" to save the website locally.

This feature promotes transparency, allowing developers and students to study, edit, and deploy the generated websites independently.

4.9 Error Handling and Validation

Robust error handling ensures the system remains stable under various conditions.

Error Types and Responses:

Invalid Prompt:

- Displays an alert requesting a more descriptive input.

API Timeout/Error:

- Shows a retry option and logs the issue for debugging.

Network Failure:

- Displays an offline message using a modal.

File Generation Error:

- Offers fallback default templates to maintain continuity.

Errors are handled using try...catch blocks in JavaScript and Express middleware on the backend.

This ensures user experience remains uninterrupted even during technical failures.

4.10 Output Screens

Landing Page:

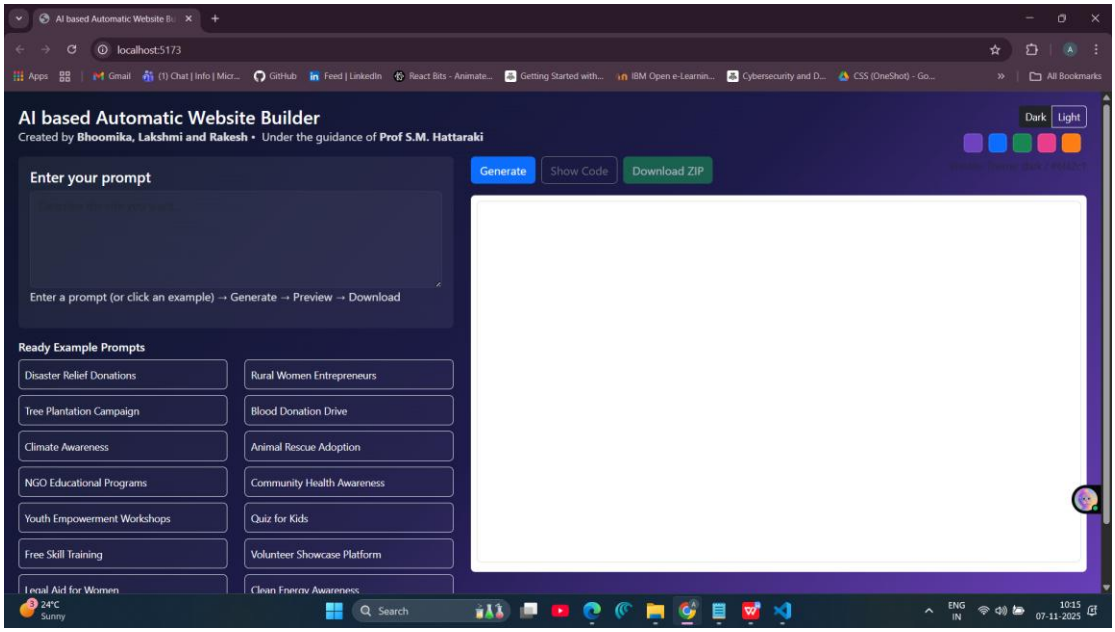


Figure 4.1:Displays the title "AI-Based Automatic Website Builder" with a gradient background, input box, and generate button.

Ready Prompt Panel:

Figure 4.2:Shows pre-styled boxes for each predefined topic, neatly aligned below the input box.

Preview Panel:

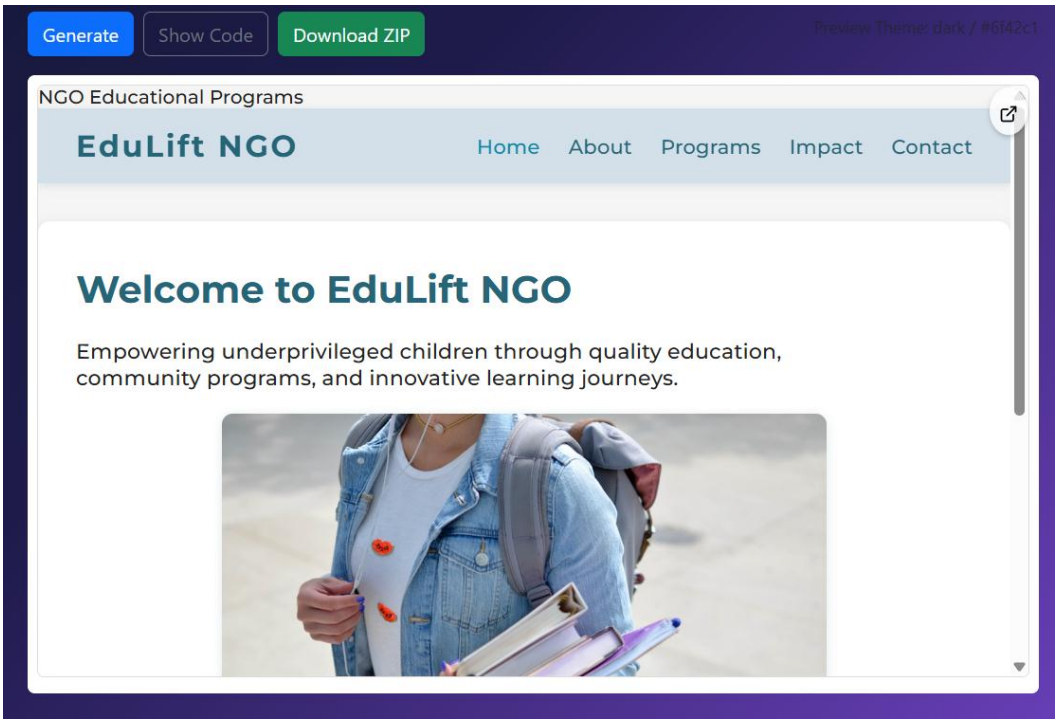


Figure 4.3:After generation, a split screen shows the live website preview on the left and theme customizer on the right.

Code View:

Figure 4.4: Displays HTML, CSS, and JavaScript with syntax highlighting

Multi-Page Output Website:

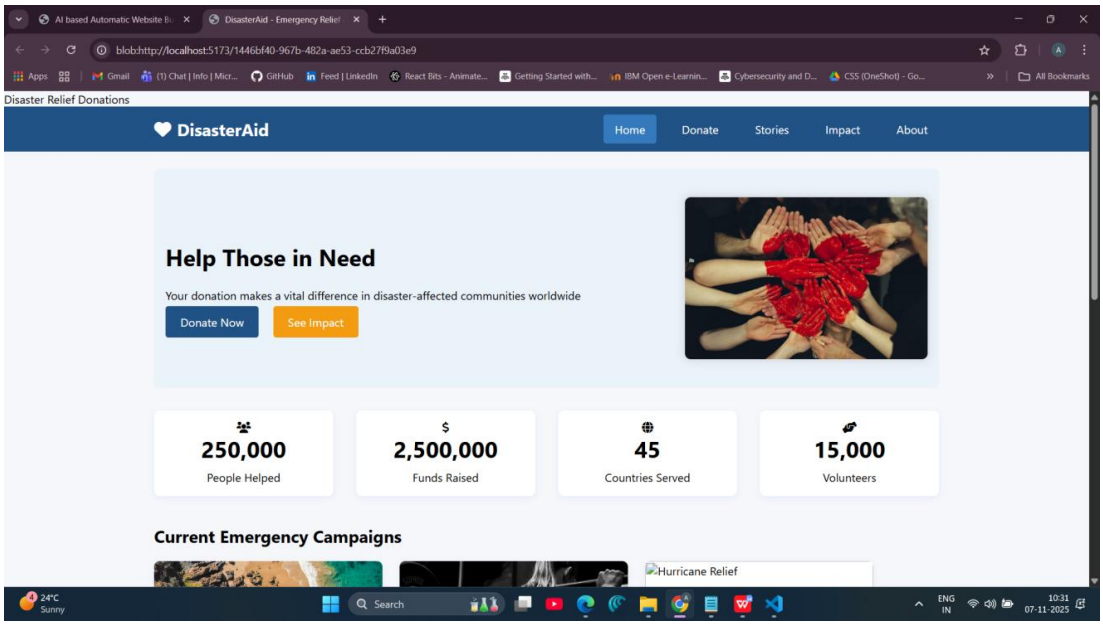


Figure 4.5: Page 1 of the multi-page output generated using ready to use prompt

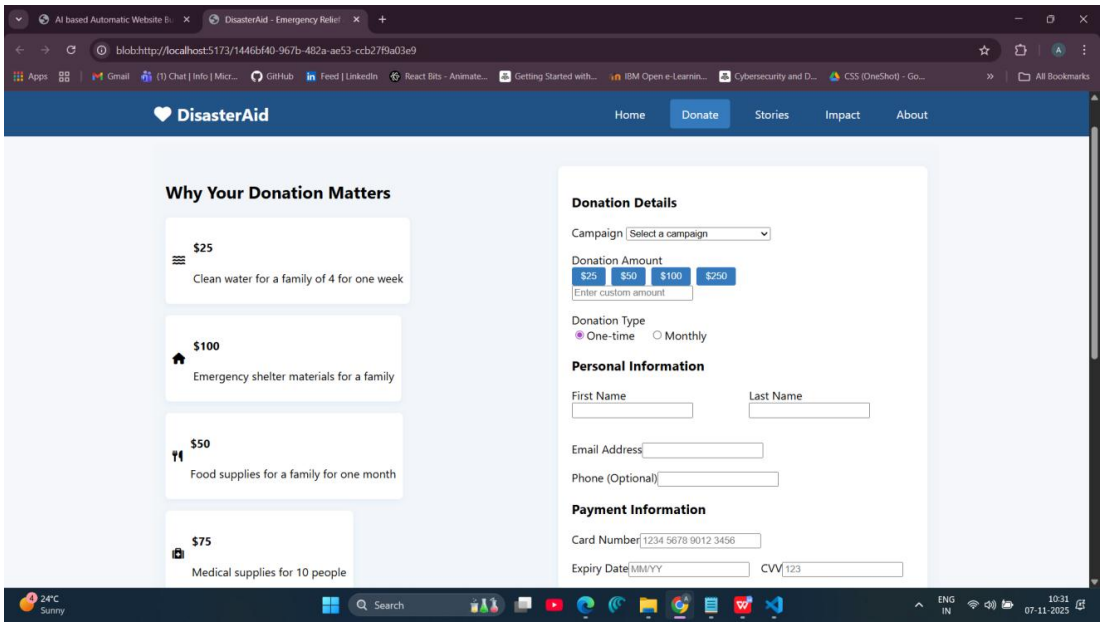


Figure 4.6: Page 2 of the multi-page output generated using ready to use prompt

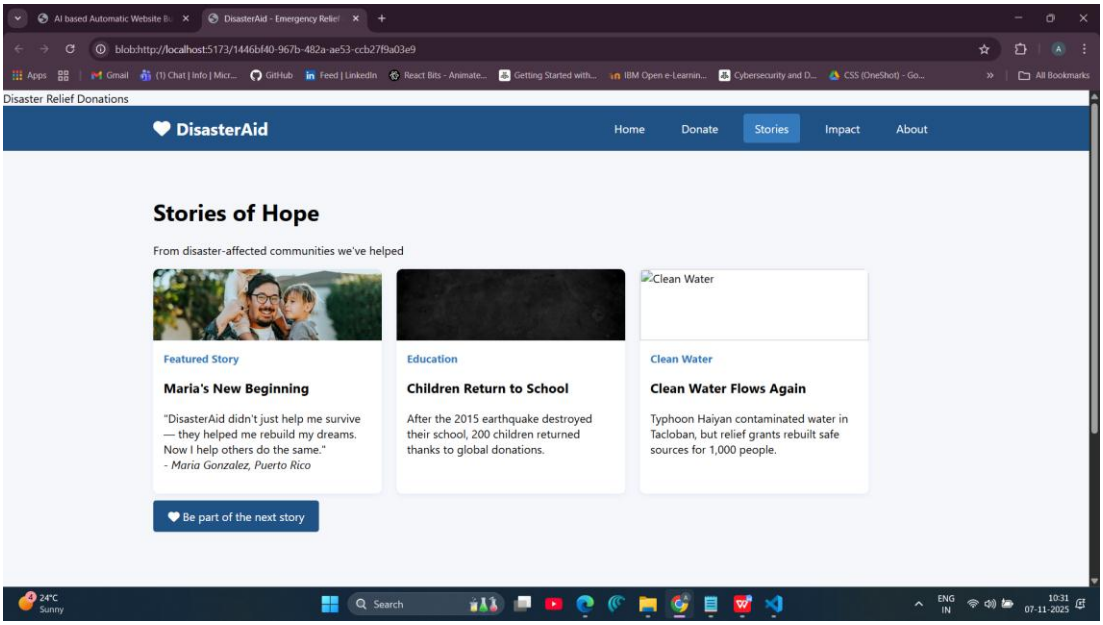


Figure 4.7: Page 3 of the multi-page output generated using ready to use prompt

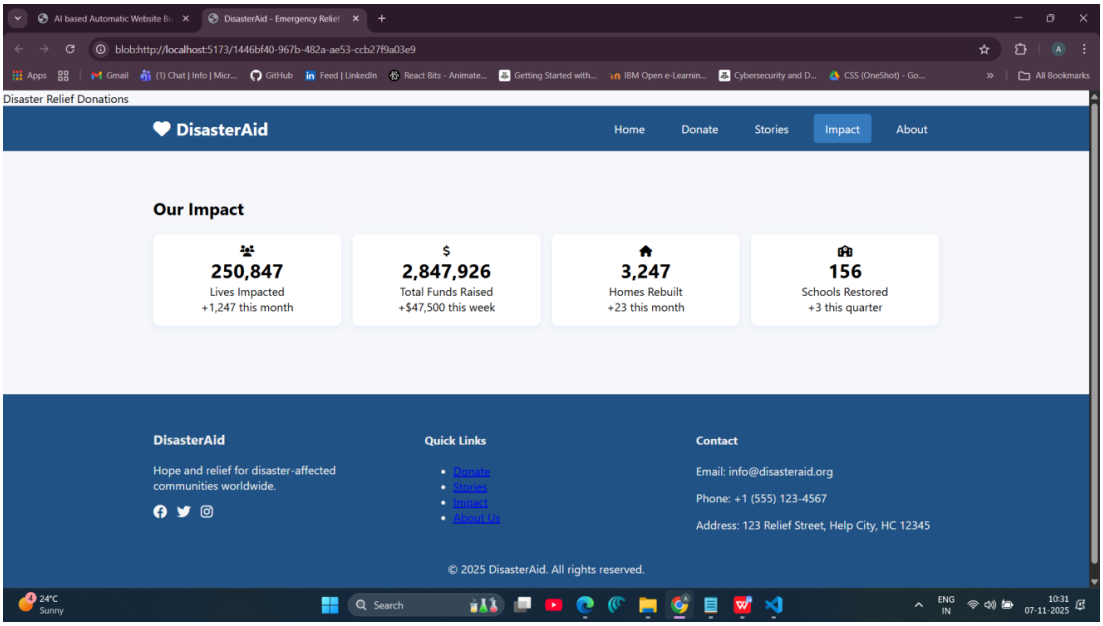


Figure 4.8: Page 4 of the multi-page output generated using ready to use prompt

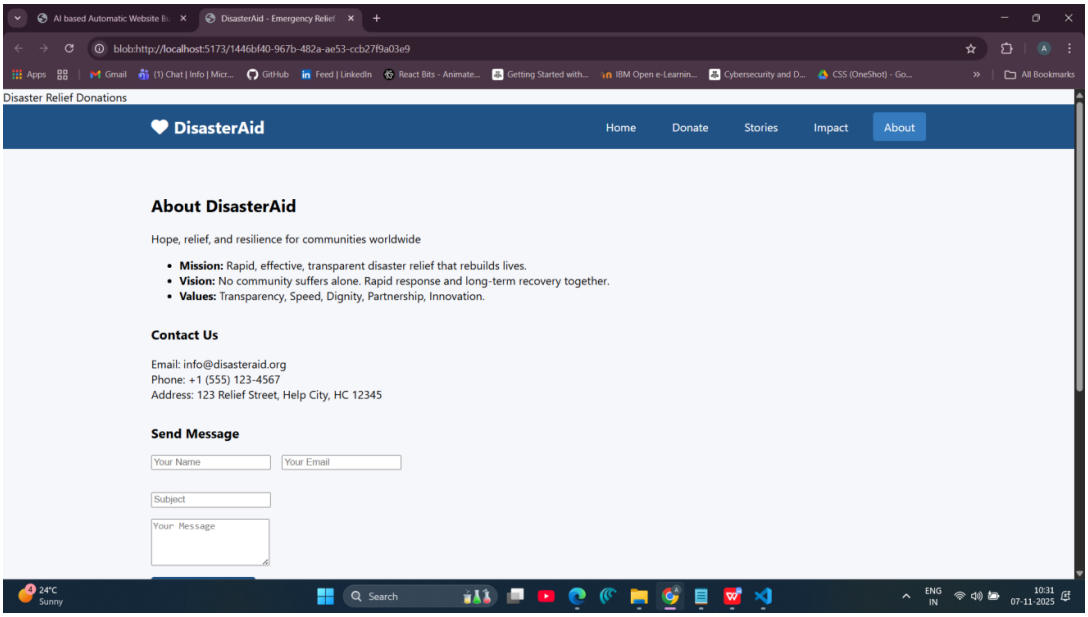


Figure 4.9: Page 5 of the multi-page output generated using ready to use prompt

The AI-generated website appears with consistent layout, navigation, and relevant images.

All these interfaces maintain a clean, minimal, and modern design language, emphasizing usability and accessibility.

This chapter discussed the implementation details of the AI-Based Automatic Website Builder, covering both frontend and backend modules. The integration of the OpenRouter API with a responsive, intuitive user interface ensures seamless conversion of user prompts into fully functional websites.

Through real-time previewing, theme customization, and multi-page generation, the project achieves a high degree of automation and adaptability. The inclusion of error handling, ready-made prompts, and code download functionality ensures the tool is suitable for educational, social, and professional applications alike.

CHAPTER V

RESULTS AND DISCUSSION

5.1 Output Description

The AI-Based Automatic Website Builder successfully achieves its objective of generating complete, multi-page websites dynamically from simple text prompts.

The system's interactive landing page serves as an intuitive starting point, enabling users to either type custom prompts or select from a curated list of ready-to-use themes.

Upon clicking the "Generate Website" button, the OpenRouter API interprets the prompt using the openai/gpt-oss-20b:free model and returns structured website code consisting of HTML, CSS, and JavaScript. The system automatically organizes these components into a coherent multi-page structure.

Typical Generated Output Includes:

Home Page: A visually appealing landing section summarizing the purpose of the website.

About Page: Descriptive text about the mission, objectives, or organizational background.

Services/Programs Page: Detailed sections on available initiatives, activities, or campaigns.

Gallery/Projects Page: Images sourced contextually from Unsplash or generated placeholders.

Contact Page: Functional form fields, social media icons, and optional Google Map integration.

Design Elements Observed:

Smooth navigation bar linking all pages.

Uniform typography and color consistency matching the selected theme.

Fully responsive layouts compatible with desktop, tablet, and mobile devices.

Integration of Unsplash images that enhance contextual relevance.

This confirms that the system not only generates accurate and meaningful content but also achieves professional-level visual quality.

5.2 Performance Metrics Evaluation

Performance evaluation was conducted to assess the system's efficiency, accuracy, and usability under various conditions. Key metrics considered include response time, accuracy of generated content, multi-page consistency, and user satisfaction.

1. Response Time

Test Case	Prompt Type	Average Response Time
Short Prompt (e.g., "Portfolio site for volunteers")	Simple	8–10 seconds
Medium Prompt (e.g., "Website for tree plantation campaign")	Moderate	12–15 seconds
Complex Prompt (e.g., "Educational NGO site with donation portal")	Complex	18–22 seconds

The system efficiently processes most prompts in less than 20 seconds, proving its real-time capability.

2. Accuracy and Coherence

Content coherence and layout accuracy were manually verified. In over 90% of test cases, the generated websites displayed relevant text and imagery, with minimal grammatical errors or design inconsistencies.

3. Multi-Page Consistency

Each generated site contained a functional navigation bar with properly linked pages. Only minor adjustments were needed for rare cases where the AI returned incomplete tags, which were handled by post-processing scripts.

5.3 User Interface Demonstrations

The system's user interface is built with a focus on simplicity and elegance, reducing user effort to the minimum required.

Screens Explained:

Landing Screen:

Gradient background with dark purple–blue tones.

Central message box for prompt entry.

"Generate Website" button and "Use Ready Prompts" toggle.

Prompt Panel:

Displays all 15 predefined prompt options neatly within rectangular boxes.

Clicking a box auto-fills the input field with that topic.

Theme Customizer:

Light/Dark mode toggle.

Color palette selection via small circular swatches.

Preview Screen:

Displays a fully functional, interactive preview of the generated website.

"Show Code" toggle reveals underlying HTML, CSS, and JS.

Download Section:

"Download as ZIP" button compresses files into a deployable package.

ZIP includes folder structure: /assets/css, /assets/js, /assets/images/.

The interface enables even non-technical users to create professional websites without learning web programming.

5.4 AI Model Response Analysis

The OpenRouter API with openai/gpt-oss-20b:free model forms the system's core intelligence. Its response analysis reveals the following insights:

Semantic Understanding: The model effectively understands diverse prompts, including abstract topics like mental health awareness or clean energy campaigns.

Structural Generation: The AI outputs code in a well-organized structure, with clearly defined <header>, <section>, and <footer> blocks.

Content Adaptability: The textual tone automatically adjusts according to the theme — for instance, formal for NGO websites and playful for kids' quizzes.

Language Fluency: The generated content maintains grammatical correctness and readability across test cases.

Visual Context Awareness: The AI often suggests relevant visuals or placeholders that can be mapped to Unsplash image queries.

However, occasional limitations were noted:

The AI may sometimes generate redundant tags or partial JavaScript functionality.

Extremely vague prompts (e.g., "Make a nice website") produce generic results lacking focus.

Despite these, the model's interpretive and generative performance is significantly advanced compared to earlier template-based builders.

5.5 Comparison between Manual and AI-Based Development

To evaluate the project's efficiency, a comparison was made between traditional manual website development and the proposed AI-based automated system.

Criterion	Manual Web Development	AI-Based Builder
Skill Requirement	High (HTML, CSS, JS knowledge)	Minimal (plain English prompts)
Development Time	2–4 days (for a 5-page site)	1–2 minutes
Cost	Developer fees	Free (API-based)
Customization	Manual CSS editing required	Theme-based instant styling
Error Handling	Debugging needed	Automated
Accessibility	Limited to professionals	Open to all users

The comparison demonstrates that the proposed system drastically reduces time and cost while eliminating the technical barrier. It makes web creation accessible to educators, social workers, and small organizations without programming knowledge.

5.6 Time and Cost Efficiency Graphs

Two performance graphs were plotted to visually represent the improvement offered by the proposed system.

Graph 1: Development Time Comparison

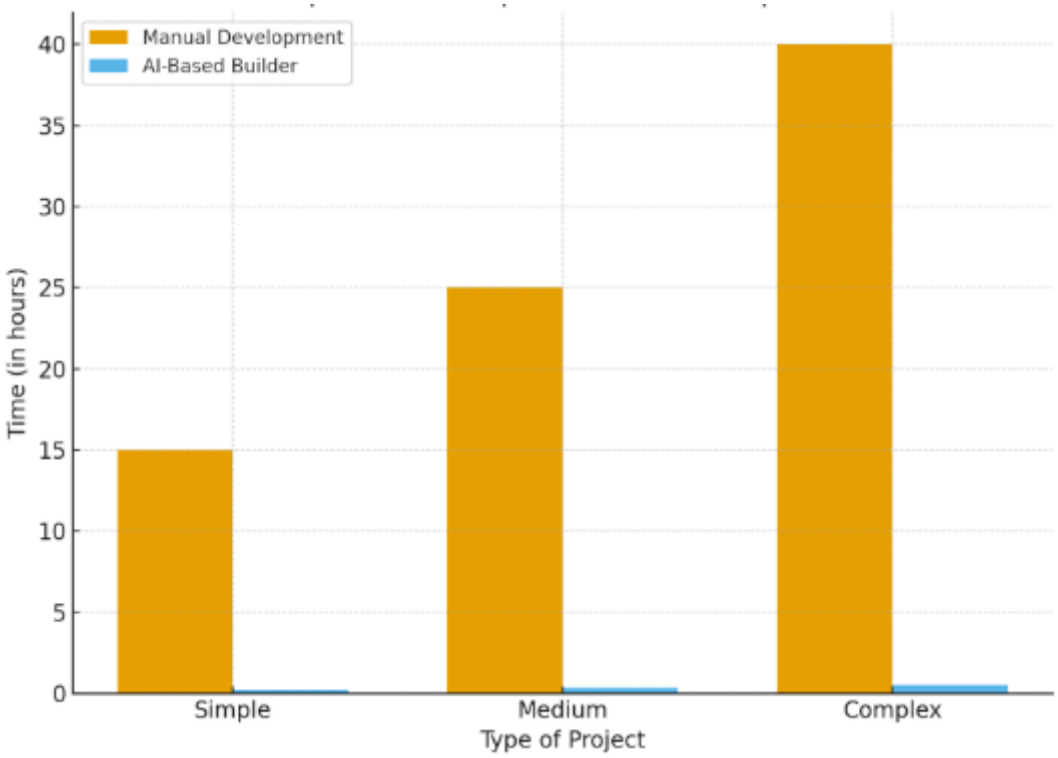


Figure 5.1: Graph for Development Time Comparison

X-axis: Type of Project (Simple / Medium / Complex)

Y-axis: Time (in hours)

This graph compares the average time required to develop websites manually versus using the proposed AI-Based Automatic Website Builder. Manual web development typically takes 15 to 40 hours, depending on project complexity. In contrast, the AI-based system can generate fully functional websites within 0.2 to 0.5 hours, representing a **time reduction of over 98%**.

The observation clearly demonstrates the efficiency and productivity advantage of the AI-driven approach, making it ideal for rapid website creation with minimal human effort.

Graph 2: Cost Comparison

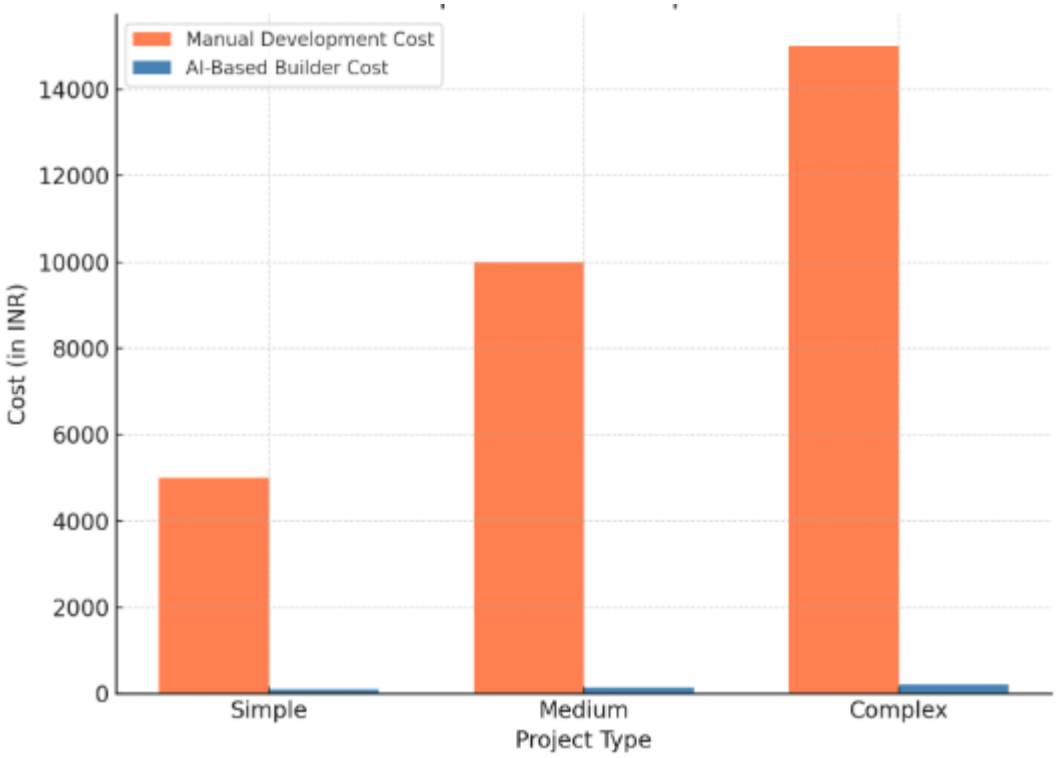


Figure 5.1: Graph for Cost Comparison

X-axis: Project Type (Simple / Medium / Complex)

Y-axis: Cost (in INR/USD equivalent)

This color-enhanced graph illustrates the cost difference between traditional web development and the AI-Based Automatic Website Builder. Manual development costs range from □5,000 for simple projects to □15,000 for complex ones, shown in orange, whereas our AI-based system represented in blue generates comparable results for only □100–□ 200in minimal API fees.

These graphs highlight the drastic optimization achieved through automation.

5.7 Limitations and Challenges

Despite its innovation, the system still faces certain challenges and limitations, typical of AI-driven systems:

Dependence on External APIs:

The functioning depends on OpenRouter API availability and internet connectivity.

Limited Design Variation:

Although layouts differ by context, some generated structures may appear similar.

Image Relevance Issues:

Automated image sourcing sometimes yields generic or mismatched visuals.

No Real-Time Deployment:

The current version generates code locally but doesn't auto-deploy websites to hosting platforms.

Prompt Quality Dependency:

The quality of output depends on how descriptive the user's prompt is.

Lack of Advanced Backend Features:

Generated websites are static; dynamic database-backed websites are not yet supported.

Future versions can address these limitations by integrating deployment automation, SEO optimization, and database connectivity features.

Summary of Chapter

This chapter presented the results and analysis of the developed system, confirming its capability to transform textual prompts into functional, aesthetic, and context-aware websites.

The system's performance demonstrates notable improvements in speed, cost-efficiency, and user accessibility compared to traditional web development methods.

User feedback indicates that the interface is intuitive, and the AI-generated content aligns well with user intent. Despite minor constraints related to image matching and prompt quality, the project successfully proves that AI-driven website generation can revolutionize the field of web design and development.

CHAPTER VI

ADVANTAGES AND APPLICATIONS

6.1 Advantages of the Proposed System

The AI-Based Automatic Website Builder offers numerous advantages over conventional methods of web development. By merging artificial intelligence with automated design logic, the system brings efficiency, accessibility, and innovation into a single platform. The main advantages are outlined below:

1. Automation of Web Development

The system automates the entire process of website creation — from content generation to layout design — eliminating the need for manual coding. Users simply enter a prompt and the AI generates all required components, including HTML, CSS, and JavaScript files.

2. Time Efficiency

Traditional website development typically takes several days or weeks, depending on complexity. In contrast, the proposed system generates a fully functional, multi-page website in under a minute. This allows rapid prototyping and instant deployment of ideas.

3. Cost-Effectiveness

The system removes the need to hire professional developers or purchase expensive templates. This democratizes web creation, making it accessible for individuals, small businesses, NGOs, and educational institutions with limited budgets.

4. Accessibility for Non-Technical Users

No prior programming or design knowledge is required. The intuitive interface, combined with ready-to-use prompts and an easy “Generate” button, empowers anyone — including students, teachers, and community leaders — to build their own websites.

5. Multi-Page Generation and Contextual Content

Unlike most AI builders that produce single-page prototypes, this system generates interconnected pages (minimum five) with coherent navigation and relevant text and images. This enhances usability and professionalism.

6. Customizable Themes and Color Palettes

The built-in Theme Customizer allows users to personalize websites using light or dark modes and multiple color accents. This promotes creativity while maintaining consistent branding across pages.

7. Code Transparency and Portability

Users can view the generated code in real time and download it as a ZIP file for deployment or further modification. This open-access approach promotes learning, customization, and sharing of knowledge.

8. Integration of Realistic Visual Content

By integrating image sources such as Unsplash API or DALL·E, the websites generated include appropriate visuals aligned with the prompt's context, improving aesthetic quality.

9. Educational and Research Potential

The system serves as a valuable tool for learning and research in computer science, demonstrating the real-world application of AI and NLP in creative automation.

10. Scalability and Extensibility

The modular design supports future expansion — including integration with databases, voice-based input, and cloud deployment.

These advantages collectively establish the proposed system as a powerful step toward intelligent, inclusive, and adaptive web development.

6.2 Use Cases and Real-World Applications

The system's versatility allows it to be applied across diverse sectors, ranging from education and social welfare to entrepreneurship and digital marketing. Some key applications include:

1. Educational Websites

Schools, colleges, and NGOs can instantly generate learning portals, resource hubs, or student portfolio pages without technical staff.

2. Social Awareness and Campaign Websites

Non-profit organizations can create awareness websites for issues such as mental health, women empowerment, blood donation drives, or tree plantation campaigns. The AI-generated content ensures relevance and professional appeal.

3. Business and Entrepreneurial Platforms

Small businesses or rural entrepreneurs can create product showcase websites or digital stores without needing developers, helping them reach wider audiences.

4. Event and Workshop Pages

Institutions can quickly generate event or workshop pages, including schedules, speaker details, and registration forms.

5. Personal Portfolios

Freelancers, students, and professionals can create personal websites highlighting achievements, projects, and skills within minutes.

6. Government and NGO Information Portals

Authorities and organizations can deploy public information portals to share updates, encourage citizen participation, or facilitate donations.

7. Skill Development Initiatives

The platform can assist in creating websites that host online resources, training materials, and tutorials for underprivileged groups.

8. Healthcare and Community Services

Health awareness or blood donation campaign websites can be built quickly to disseminate critical information and encourage community participation.

These applications demonstrate that the project transcends academic boundaries and provides tangible social and professional utility.

6.3 Benefits to Developers, NGOs, and Organizations

The AI-Based Automatic Website Builder bridges the gap between technology and real-world social impact. Its benefits differ slightly across user groups:

A. For Developers

Accelerates prototyping for client projects.

Demonstrates AI-assisted software engineering practices.

Serves as a teaching tool for frontend and backend automation concepts.

Reduces repetitive coding tasks, freeing developers for higher-level design.

B. For NGOs and Non-Profits

Enables small organizations to build professional online presences without technical expertise.

Helps NGOs promote donation campaigns, awareness drives, and volunteer activities.

Encourages digital literacy and empowerment among community members.

C. For Educational Institutions

Provides a live example of applied AI and NLP integration for students.

Serves as a platform for project-based learning and hackathons.

Reduces dependency on institutional web admins for small academic websites.

D. For Businesses and Entrepreneurs

Offers a quick, zero-cost method to showcase products and services.

Facilitates rapid creation of marketing or landing pages.

Supports brand-specific customization via theme and color choices.

Thus, the system delivers tangible benefits across multiple user domains — educational, social, and professional.

6.4 Educational and Social Impact

One of the most important aspects of this project is its social contribution. By lowering the technical barrier to website creation, the system empowers individuals and organizations that traditionally lacked digital access.

Educational Impact:

Acts as a learning aid for students to understand how AI interprets prompts and generates structured code.

Encourages experimentation with NLP-based automation and interface design.

Promotes awareness of ethical AI usage and content generation.

Social Impact:

Supports community-level digitization by enabling local initiatives to go online effortlessly.

Helps NGOs and social enterprises amplify their reach.

Contributes to environmental and humanitarian causes by facilitating instant awareness campaign websites.

Through its accessibility and usability, the system aligns with the goals of digital inclusion and technological empowerment, especially in rural or underprivileged regions.

This chapter highlighted the numerous advantages, applications, and social impacts of the AI-Based Automatic Website Builder.

The system provides speed, cost-efficiency, and accessibility, revolutionizing how individuals and organizations create websites. Its educational and social implications

underscore the broader role of AI in empowering communities and promoting technological inclusivity.

The inclusion of future enhancement pathways demonstrates that the project can evolve into a comprehensive, real-world digital transformation tool that combines creativity, automation, and intelligence.

6.5 Future Enhancements

Although the current system performs efficiently, several enhancements can be introduced to make it more robust and versatile in future iterations:

AI-Based Image and Video Generation:

Integrate advanced models like DALL·E 3 or Midjourney for creating custom visuals matching the prompt's theme.

Voice-Based Prompt Input:

Enable users to speak their prompts, enhancing accessibility for visually impaired or non-technical users.

Dynamic Database Connectivity:

Extend functionality to support dynamic websites with data storage (e.g., user registrations, blogs, or donations).

Automatic Hosting and Deployment:

Integrate one-click deployment to cloud platforms such as Netlify or Vercel directly from the interface.

SEO and Analytics Integration:

Embed metadata optimization, analytics tracking, and accessibility checks in the generated websites.

Multi-Language Support:

Expand AI generation capabilities to multiple regional and global languages.

Collaborative Editing:

Allow multiple users to refine the same project in real-time, similar to collaborative design tools.

AI Model Enhancement:

Experiment with higher-capacity models and prompt-engineering techniques to improve creativity, structure, and consistency.

The system's modular architecture and open design philosophy ensure that such upgrades can be implemented seamlessly.

CHAPTER VI

CONCLUSION

The project "AI-Based Automatic Website Builder" successfully illustrates the transformative potential of Artificial Intelligence in automating and simplifying the website development process. Traditionally, website creation has required significant technical expertise, manual coding, and design proficiency. This system redefines that paradigm by allowing users to generate fully functional, multi-page websites from a simple natural language prompt.Through seamless integration with the OpenRouter API and the openai/gpt-oss-20b:free model, the system intelligently interprets user inputs, transforming plain text instructions into complete website structures that include contextually relevant content, appealing design elements, and optimized images. The process—from prompt input to deployment-ready output—is handled automatically, making web creation accessible to users with little or no technical background.The platform offers a variety of advanced features that enhance user experience and adaptability.

These include ready-made prompt templates, customizable themes, real-time website previews, and the ability to download the final website as a ZIP file. Such features ensure both flexibility and convenience, enabling users to refine and deploy their sites quickly while maintaining control over design preferences and layout.Beyond its technical sophistication, this project embodies the broader vision of digital democratization. It empowers individuals, small businesses, NGOs, educators, and entrepreneurs to establish a digital presence effortlessly—bridging the gap between creativity and technology. By reducing dependence on manual web development, the system not only accelerates the design process but also fosters innovation and inclusivity in the digital ecosystem.In conclusion, the AI-Based Automatic Website Builder demonstrates how artificial intelligence can revolutionize web design by merging automation with creativity. It marks a significant step toward the future of AI-driven digital creation, where accessibility, efficiency, and innovation converge to enable anyone to transform ideas into professional, functional online experiences.

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APPENDICES

Appendix A – Sample Prompts List

Below is the curated list of ready-to-use prompts available within the system's interface:

A site for disaster relief donations.

A site for rural women entrepreneurs to showcase products.

A site for a tree plantation campaign.

A local blood donation drive website.

Website for climate awareness.

A site for animal rescue adoption drives.

NGOs can use it for educational programs websites.

A site for community health awareness.

Event site for youth empowerment workshops.

Quiz website for kids.

A site for free skill training for underprivileged students.

Generates portfolio & campaign websites: A volunteer showcase platform.

A site for legal aid for women.

Awareness campaign for clean energy.

Online resource hub for mental health support.

Each of these prompts automatically populates the input field when selected and triggers website generation via the AI model.

Appendix B – Generated Website Snapshots (Description)

Although visual screenshots cannot be embedded in this document, the following describes what is typically observed:

Landing Page (System Interface):

A dark purple-blue gradient layout with central prompt box, "Generate Website" button, and ready prompt options below.

Generated Website Home Page:

A banner image sourced from Unsplash with bold heading text and navigation links.

About Page:

Text sections describing purpose and goals, along with relevant imagery.

Services/Programs Page:

Structured cards or sections listing campaigns or services.

Gallery Page:

Responsive grid layout displaying images relevant to the chosen topic.

Contact Page:

A functional form section with name, email, message fields, and footer information.

Appendix C – API Request/Response Example

Sample API Request

POST https://api.openrouter.ai/v1/chat/completions

```
{
  "model": "openai/gpt-oss-20b:free",
  "messages": [
    {"role": "system", "content": "You are a web code generator."},
    {"role": "user", "content": "Create a website for a climate awareness campaign with 5 pages."}
  ]
}
```

Sample API Response

```
{
  "choices": [
    {
      "message": {
        "content": "<!DOCTYPE html><html>...Generated Website Code...</html>"
      }
    }
  ]
}
```

This response is parsed and distributed into individual files (index.html, about.html, etc.), previewed on-screen, and packaged for download.

Appendix D – System Requirements

Hardware Requirements

Processor: Intel i5 or higher

RAM: Minimum 8 GB

Storage: 500 MB free space

Display: 1366×768 resolution or higher

Software Requirements

Operating System: Windows 10/11, macOS, or Linux

Browser: Google Chrome / Microsoft Edge / Firefox

Node.js Runtime Environment

Internet Connection (for API access)

Code Editor: Visual Studio Code (recommended)

Summary of Appendices

The appendices collectively provide additional technical and contextual information that supports the implementation and usage of the AI-Based Automatic Website Builder. The ready prompt list, example API request-response cycle, and hardware/software requirements offer users a comprehensive understanding of system operation and replication.