

A Survey On: “Ai Powered Web Ui Generator from Text Prompts”

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Abstract - The project aims to develop an intelligent system that automatically creates web pages using basic text input. Web development requires extensive time resources and programming expertise in languages such as HTML and CSS and JavaScript. People have creative website concepts which they cannot turn into actual web pages because they lack programming skills. The AI Powered Web UI Generator from Text Prompt allows users to describe their ideas using normal English sentences, such as “Create a login page with username and password boxes. The system uses Artificial Intelligence (AI) and Natural Language Processing (NLP) to understand this command and generate the correct HTML, CSS, and JavaScript code automatically.

I. INTRODUCTION

The current digital era considers websites as vital resources for users who need to access digital content. Users utilize them to acquire knowledge, make purchases, enjoy entertainment, interact with others, and conduct business activities. Every company or individual who wants to share information or services online needs a website. The process of creating a website requires both technical expertise and extended time dedication for manual website development projects.

The conventional approach to web development requires multiple stages which include planning, coding, testing, and deployment activities. The developers need coding knowledge which includes HTML and CSS and JavaScript and the React and Bootstrap frameworks. The task becomes challenging for beginners because they lack knowledge about programming.

Artificial Intelligence can help reduce this problem. AI can understand natural human language, analyze

it, and generate outputs like text, code, or designs. The development of systems which transform standard text input into actual web designs now exists because of our utilization of NLP and AI models.

Our project, AI Powered Web UI Generator from Text Prompt, aims to make website creation easier for everyone. The system generates the desired website design when the user enters their preferred website type. The system will create the entire layout for that request when the user types Make a homepage with an image, navigation bar, and footer. The technology provides developers with time savings while enabling non-programmers to design web applications through its design and prototyping capabilities. The software development industry today shows how AI technologies enable developers to create innovative software solutions.

II. MOTIVATION

The main motivation for this project comes from the need to simplify web development. Many people have creative ideas but do not have the coding skills to make websites. Even developers continue to repeat identical tasks while they create basic website layouts. This process requires multiple resources which result in unnecessary time consumption.

Website builders such as Wix and WordPress and Squarespace provide users with building tools but they still need users to choose templates and manually edit their content. The tools fail to interpret natural language because they only operate with predefined commands. The users must manually move elements and change their design to complete their tasks.

Our system will convert basic English sentences into full website designs through automatic processing. The solution will assist students and startups and freelancers and small businesses who need fast website development because they cannot pay for developers.

The second motivation for this research project involves using artificial intelligence to create automated systems that function in actual environments. AI currently supports multiple applications which include generating images and recognizing speech and helping users with writing tasks. The application of AI technology to web development tasks will enhance both software engineering processes and user experience.

The project enables people to learn creatively because it removes the need for people to remember coding syntax and programming standards. The system helps innovative work to proceed faster because it cuts development time while it helps organizations to complete their digital transformation processes.

III. LITERATURE REVIEW

The recent years have produced various research projects and tools which aim to automate coding and web development tasks through their various automated tools. GitHub Copilot and OpenAI Codex use deep learning technology to create code snippets from user text input. These programming tools assist developers, but they fail to help individuals who lack programming skills.

Researchers use Natural Language Processing methods to create code generation systems. Gupta and Sharma (2021) studied automatic code generation using NLP models to translate user instructions into code segments. The research team dedicated their study to backend programming but did not investigate user interface design or web development design.

Johnson (2022) developed an AI-powered web design program which creates website templates from written content, yet the resulting output needed complete manual adjustment. The platforms ChatGPT and Copilot demonstrate that large language models possess the ability to comprehend human language through their AI-powered systems. The existing systems require development for connecting text comprehension capabilities with visual design and web page layout creation functions.

Our method delivers increased usability which enables beginners to build web pages through simple steps without needing extensive technical expertise.

IV. SCOPE INCLUDED

1. Text-Based Input Users can enter their requirements in simple natural language through the example of creating a login page which requires a username and password.
2. AI-Based Processing The system uses artificial intelligence and natural language processing NLP to understand the user input.
3. Automatic UI Generation The system transforms text prompts into structured UI components which include forms and buttons and layouts.
4. Code Generation The system automatically creates front-end code which includes HTML and CSS and basic JavaScript.
5. Live Preview The system shows the created user interface in real time to enable users to observe the system output.
6. Editable Output The system enables users to change and design their generated user interface according to their specific needs.
7. Export Feature Users can download or copy the generated code to use it in their personal projects.
8. User-Friendly Interface The system was developed to provide beginners with no coding experience an easy way to use its functions.

V. REQUIREMENT ENGINEERING

The AI Powered Web UI Generator development process needs Requirement Engineering as its essential first step. The system requirements establish complete system functions and performance standards. The system needs text prompt conversion to web UI capability, which the requirements must provide to ensure accurate operation and user contentment.

Functional Requirements:-

1. The system needs to provide users with text prompt input which they can use to explain their user interface requirements.
2. The system needs to execute its input processing through artificial intelligence and natural language processing methods.

3. The system needs to create user interface elements according to the specifications provided by the user.
4. The system needs to generate HTML and CSS and fundamental JavaScript code through its automated system.
5. The system needs to show users a real-time demonstration of the user interface that has been created.
6. The system needs to provide users with the ability to modify the automatically generated user interface.
7. The system needs to offer template selections which enable users to create user interfaces more efficiently.
8. The system needs to provide users with the option to either download the created code or copy it directly.

Non-Functional Requirements:-

1. The system needs to provide a simple interface which both new users and developers can operate without difficulty.
2. The system needs to produce user interfaces at high speed without any waiting times.
3. The system needs to deliver identical results for matching inputs which it produced in previous tests.
4. The system needs to support simultaneous access from multiple users who use the system at the same time.
5. The system needs to protect user data including their input information through effective security measures.
6. The system needs to provide straightforward methods for future system updates and enhancements.
7. The generated user interface needs to function properly on various web browsers and devices.

VI. EXISTING SYSTEM

Web development today requires designers and developers to create complete website code through manual programming work. Web developers need to create the entire website codebase because they must write HTML and CSS and JavaScript code for developing interactive website sections. The traditional process requires substantial time resources and it demands programming skills for execution.

Website builders that use drag-and-drop functionality still need users to choose website templates and create website elements and modify website layouts. These systems still require some technical understanding, and they cannot generate unique designs automatically from simple text descriptions.

AI tools like ChatGPT and Copilot can write pieces of code, but they do not automatically display a live web page. Users must copy and paste the generated code into an editor to see the results.

Our proposed system improves this process by combining AI, NLP, and frontend generation. The system takes a text prompt and generates a complete web page which shows the output in real time. The process now requires fewer steps because it eliminates manual coding work which speeds up the creation of websites.

VII. PROPOSED SYSTEM

The system operates by receiving user text input which it processes through Natural Language Processing to create web code.

Main steps of the process:

- The system analyzes user input to determine which web elements require development which includes forms buttons images and text.
- The system uses an AI model to create accurate HTML CSS and JavaScript code which corresponds to the required web elements.
- The system provides users with an immediate live demonstration of the web page that it generates.
- Users have the ability to modify content by providing new text prompts which include Add a footer and Change background color to blue.

The system provides users with an interactive experience that maintains high usability standards. The system can create basic web pages together with forms and website designs through automatic processes without requiring any coding work from users.

System Architecture Diagram



VIII. METHODOLOGY

The AI Powered Web UI Generator follows a step-by-step process to convert user text into a working web interface. The methodology is explained below:

1. User Input: the process starts when the user enters a text prompt describing the required UI, such as a login page, form, or dashboard.
2. Text Understanding: The system reads and analyzes the input using natural language processing NLP to understand what the user wants.
3. Component Identification: The system uses the input data to find different user interface components which include buttons and text fields and images and navigation bars.
4. UI Structure: Creation The system organizes these components into a proper layout to form a complete user interface.
5. Code Generation: The system creates HTML and CSS and basic JavaScript code after the structure has been designed.
6. UI Rendering: The system shows the generated code as a live preview which allows users to observe the interface design.

IX. ADVANTAGES

The AI Powered Web UI Generator provides several benefits that improve the process of web development. The key advantages are:

1. The system quickly generates UI from text prompts. The system quickly generates UI from text prompts. The system needs no manual coding work.
2. Users with little or no programming knowledge can create web interfaces easily.
3. Developers do not need to write code from scratch which lowers effort.
4. The system helps in fast creation of UI designs which developers use for testing and demonstration.
5. Developers can spend more time on functionality work because they need to use less time for UI design work.

X. LIMITATIONS

The AI Powered Web UI Generator has some limitations that should be considered:

1. The first limitation about the system requires users to deliver precise input which affects the results of their tests.
2. The system may not handle highly complex or advanced UI designs perfectly.
3. The system depends on AI processing which requires users to have a stable internet connection.
4. The generated UI needs user modifications to match their specific needs.
5. The system needs extra time to produce results when users send multiple large requests.

XI. RESULT

Researchers successfully created and tested the AI Powered Web UI Generator through testing various text prompt types. The system successfully processed user input to create relevant web UI elements which included login forms and registration pages and basic dashboards. The system operated at high efficiency while producing valuable results except for a few outputs which needed small manual changes.

Below are sample outputs of the system:

Figure 1: Login Page-

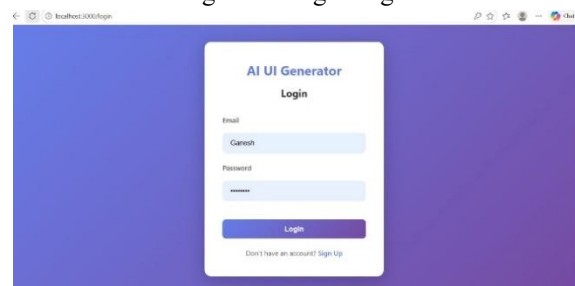


Figure 2: Home Page-

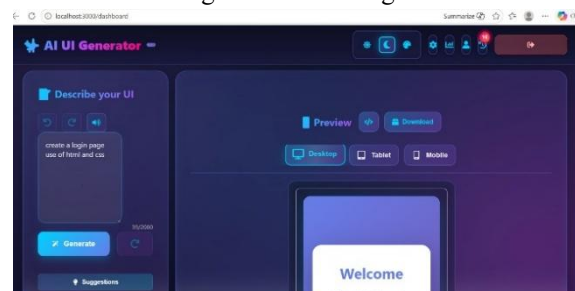


Figure 3: UI History-

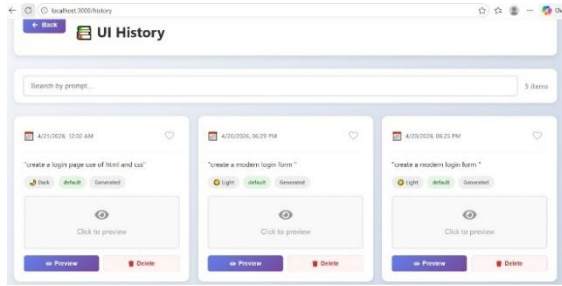


Figure 4: Multiple View Modes-

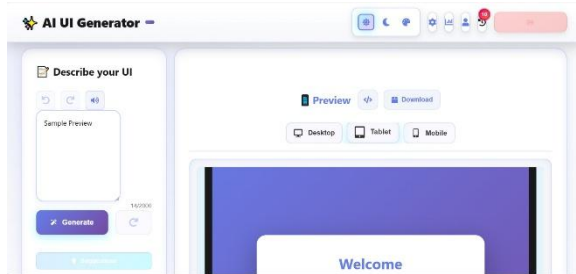
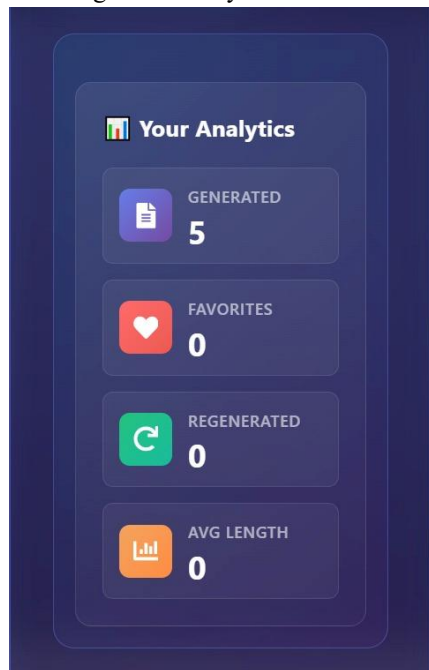


Figure 5: Analytics Section-



XII. CONCLUSION

The AI Powered Web UI Generator from Text Prompt enables users to create websites through Artificial Intelligence without requiring any programming knowledge which makes web design available to all users. The project demonstrates that AI and NLP technology enable machines to process human language while executing complicated tasks which include building websites through automated methods. The system decreases time requirements

while decreasing the amount of work needed from users and it boosts innovative thinking capacity of users. The system needs to develop advanced systems which generate intricate design structures together with animations and interactive web application elements.

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