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# AI-POWERED WEBPAGE BUILDING SYSTEM AND METHOD

## Abstract

Exemplary embodiments provide a system for building a webpage. The system may include at least one processor configured to execute processor executable instructions, and a non-transitory computer-readable storage medium including processor executable instructions. When the processor executes the instructions, the processor is operative to receive data corresponding to a webpage having a webpage design and a webpage structure, analyze the webpage design and structure, generate computer code or webpage output language corresponding to the webpage design and structure, and store the computer code in the non-transitory computer-readable storage medium.

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# Background/Summary

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present general inventive concept relates to methods and systems for building webpages. More particularly, the present general inventive concept relates to generating computer code corresponding to the design and structure of a webpage.

2. Description of Related Art

[0002] There have been previous systems and methods that have been developed for creating webpages and websites. For purposes herein, the terms webpage and website are used interchangeably. With these prior systems and methods, manual entry of every single line of code corresponding to the webpage design and structure is required. However, such systems and methods are time consuming and have a significant risk error.

[0003] Therefore, what is desired is a system and method for building websites and webpages that utilizes artificial intelligence to understand the design and structure of a webpage and then generate computer code corresponding to the webpage design and structure. This improvement is significant because there currently exists a disconnect between designing a webpage and coding it. That is, a webpage design and structure may be challenging to replicate in code, especially through conventional, manual means. The present general inventive concept eliminates this disconnect.

SUMMARY OF THE INVENTION

[0004] Exemplary embodiments provide a system for building a webpage. The system may include at least one processor configured to execute processor executable instructions, and a non-transitory computer-readable storage medium including processor executable instructions. When the processor executes the instructions, the processor is operative to receive data corresponding to a webpage having a webpage design and a webpage structure, analyze the webpage design and structure, generate computer code or webpage output language corresponding to the webpage design and structure, and store the computer code in the non-transitory computer-readable storage medium.

[0005] In alternative exemplary embodiments, the system may be configured to use artificial intelligence software to analyze the webpage design and structure.

[0006] In alternative exemplary embodiments, the system may be configured to use artificial intelligence software to generate the computer code corresponding to the webpage design and structure.

[0007] In alternative exemplary embodiments, the artificial intelligence software may include at least one of ChatGPT, Google Gemini AI Models, and OpenAI GPT.

[0008] In alternative exemplary embodiments, the processor may be configured to communicate the stored computer code.

[0009] In alternative exemplary embodiments, the processor may be configured to communicate with at least one internet design platform, and the processor may be configured to receive the webpage design and structure from the internet design platform.

[0010] In alternative exemplary embodiments, the internet design platform may comprise Figma.

[0011] In alternative exemplary embodiments, the system may be configured to convert the webpage design and structure into at least one of a plurality of webpage output languages. That is, the computer code may be generated in any type of webpage output language or computer code language or any combination of code languages.

[0012] In alternative exemplary embodiments, the system may further include a user interface that enables a user to make changes to the webpage design and structure.

[0013] In alternative exemplary embodiments, the user interface enables a user to make changes to

the webpage design and structure after generation of the computer code corresponding to the webpage design and structure.

[0014] In alternative exemplary embodiments, when the processor executes the instructions, the processor may be further operative to automatically update the generated computer code with computer code corresponding to the user changes to the webpage design and structure.

[0015] Alternative exemplary embodiments provide a method of building a webpage. The method may include receiving, by a processor, data corresponding to a webpage, wherein the webpage includes a design and structure. The method may further include analyzing, using the processor, the webpage design and structure. The method may further include generating, using the processor, computer code corresponding to the webpage design and structure. The method may further include storing the computer code in a non-transitory computer-readable storage medium.

[0016] In alternative exemplary embodiments, the method may further include using artificial intelligence software to analyze the webpage design and structure.

[0017] In alternative exemplary embodiments, the method may further include using artificial intelligence software to generate the computer code corresponding to the webpage design and structure.

[0018] In alternative exemplary embodiments, the artificial intelligence software may be at least one of ChatGPT, Google Gemini AI Models, and OpenAI GPT.

[0019] In alternative exemplary embodiments, the processor is configured to communicate the stored computer code.

[0020] In alternative exemplary embodiments, the method may further include communicating, using the processor, with at least one internet design platform, and receiving the webpage design and structure from the internet design platform.

[0021] In alternative exemplary embodiments, the internet design platform comprises Figma.

[0022] In alternative exemplary embodiments, the computer code corresponding to the webpage design and structure is in at least one of a plurality of webpage output languages.

[0023] In alternative exemplary embodiments, the method may further include, after generating of the computer code, automatically updating the generated computer code with computer code corresponding to user changes to the webpage design and structure.

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## Description

BRIEF DESCRIPTIONS OF THE DRAWINGS

[0024] These and/or other aspects of the present general inventive concept will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

[0025] FIG. **1** is a network diagram of a system for building webpages including a webpage building module according to an exemplary embodiment of the present inventive concept;

[0026] FIG. **2** is a flowchart of a method of using a system for building webpages according to an exemplary embodiment of the present inventive concept;

[0027] FIG. **3** is a flowchart of a method of using a system for building webpages according to another exemplary embodiment of the present inventive concept; and

[0028] FIG. **4** is a flowchart of a method of using a system for building webpages according to another exemplary embodiment of the present inventive concept.

DETAILED DESCRIPTION OF THE INVENTION

[0029] Reference will now be made in detail to the exemplary embodiments of the present general inventive concept, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to the like elements throughout. The exemplary embodiments are described below in order to explain the present general inventive concept by referring to the

figures.

[0030] FIG. **1** is a network diagram of a system **100** for building webpages including a webpage building module **140** according to an exemplary embodiment of the present inventive concept and FIG. **2** is a flowchart of a method **200** of using a system for building webpages according to an exemplary embodiment of the present inventive concept.

[0031] Referring to FIGS. **1-2**, the exemplary system for building webpages, designated generally as **100**, is illustrated. In the present embodiment, the system for building a webpage **100** is designed and configured to utilize artificial intelligence to analyze and understand the structure and design of a webpage and to generate computer code or webpage output language corresponding to the webpage design and structure. That is, the exemplary system and method for building a webpage **100** is designed to utilize artificial intelligence to convert a webpage's design and structure descriptions into website code, effectively and accurately. This improvement is significant because it eliminates the potential for error between designing a webpage and coding it, i.e., a webpage's design and structure may be challenging to replicate in computer code using conventional, manual means. As such, users are enabled to automate the computer or software code writing process and to view how a webpage design translates into a live, functioning webpage. However, the present general inventive concept is not limited thereto.

[0032] The exemplary system and method for building a webpage **100** is useful for both experienced web developers and beginner web developers. For experienced web developers, it speeds up the workflow by automating the tedious webpage development step where the webpage design and structure is converted into computer code or webpage output language. During manual or human conversion, this step has a high risk of error.

[0033] The computer code corresponding to the design and structure of the webpage comprises the building blocks of any webpage. That is, the design and structure of a webpage are translated into computer code through a combination of different types of computer code language or webpage output language for the different elements of the webpage design and structure. For example, different languages are used for the visual structure of the webpage, the styling, and for interactivity. However, additional languages may be used for other features or elements of the webpage. The process of translating the webpage design and structure into computer code or webpage output language is tedious and the process involves careful planning, coding, and testing to create a function and user-friendly webpage and/or website.

[0034] For beginner web developers, the present inventive concept enables them to understand how their web designs are translated into real, functioning websites, without needing extensive coding knowledge. Further, it represents a significant step in integrating artificial intelligence into the webpage design and development process, making it easier and more efficient to turn creative ideas into live webpages. Still further, the present general inventive concept generates a highly accurate computer code corresponding to the webpage design and structure. However, the present general inventive concept is not limited thereto.

[0035] The integration of artificial intelligence into the tedious process of translating a webpage design and structure into computer code or webpage output language provides significant benefits and efficiencies. That is, the present generally inventive concept is configured to utilize artificial intelligence to significantly streamline the process of translating a webpage design and structure into computer code. The exemplary system according to the present general inventive concept is configured to analyze design and structure files and automatically generate computer code or webpage output language corresponding to the design and structure of the webpage.

[0036] The exemplary system **100** is configured to interpret the layout of the design, including grids, spacing, and positioning of elements. The system **100** is configured to extract color palettes, typography, and other visual styles from the design and translate them into webpages output language. The system **100** is configured to identify reusable components like buttons and navigation bars and to generate webpages output language for them. The system **100** is configured

to assist developers in writing code by suggesting relevant snippets and completing lines based on the context and desired functionality. The system **100** is configured to speed up the coding process by automating repetitive tasks and providing intelligent suggestions as well as helping users and developers write more efficient, maintainable, and error free code. The system **100** is further configured to provide real-time feedback, suggest improvements, and event automatically fix minor errors.

[0037] The exemplary system **100** is further configured to provide to users via displays of associated remote electronic devices a dynamic user interface to build a webpage and have it translated into webpage output language or computer code, and to provide a system for making updates and design and structure changes to the webpage after generation of the computer code corresponding to the webpage, and to have those updates and design and structure changes incorporated into the generated computer code or webpage output language by the system, thereby automatically updating the previously generated computer code or webpage output language of the webpage. The exemplary user interface provides a quick and easy solution to effectuate these webpage design and structure changes. The user interface may include a webpage design platform, access to artificial intelligence, and is associated with a processor that is configured to communicate with various other components of the system, as well as external systems, servers, devices, or other processors or computers.

[0038] In exemplary embodiments, as shown in FIG. **1**, the exemplary system **100** comprises at least one processor **110**, at least one input device **120**, at least one display screen **130**, a webpage design platform module **140**, and a non-transitory processor readable storage medium **150**.

[0039] The exemplary system **100** is configured to utilize artificial intelligence software to analyze and understand the design and structure data of a webpage. In one embodiment, system **100** utilizes artificial intelligence software or code stored in a local processor readable storage medium **150** to analyze a webpage's design and structure and to translate the webpage design and structure into computer code or webpage output language using a webpage building module **140**. In other embodiments, system **100** is configured to access, connect with, or communicate with artificial intelligence software or code stored remotely or accessible via the Internet, such as ChatGPT®, Google Gemini® Artificial Intelligence (AI) Models, or OpenAI® GPT. However, other artificial intelligence services may be used as well. In such embodiments, system **100** uses the accessible artificial intelligence software or code to analyze and understand the webpage's design and structure and to convert the design and structure into computer code. However, the present general inventive concept is not limited thereto.

[0040] In exemplary embodiments, the processor **110** may comprise, but is not limited to, one or more processors of computers, smart devices, smart phones, or any other electronic devices. The exemplary processor **110** may include one or more general-purpose processors responsible for executing the core logic and instructions involved in the conversion process, such as analyzing design files, generating code, and optimizing performance. The exemplary processor **110** may comprise graphics processing units to provide highly parallel processors that excel at handling the intensive computations often involved in image and visual data processing, such as analyzing and translating visual elements from the design into CSS styles. The exemplary processor **110** may include field programmable gate arrays to provide customizable hardware devices that can be reconfigured to perform specific tasks efficiently. FPGAs can accelerate certain aspects of the conversion process, such as image recognition or low-level code generation. The exemplary processor **110** may include specialized AI/ML processors designed specifically for accelerating machine learning tasks, such as those used in AI-powered code generation tools that learn from existing codebases and design patterns to generate optimized code.

[0041] The exemplary input device **120** comprises, but is not limited to, at least one of a computer mouse, a track pad, a touch screen, a voice command software or system or any other input device.

[0042] The exemplary display screen **130** comprises, but is not limited to, a computer screen, a

smart phone display screen, a smart device display screen, a projector, or any other type of display or display screen.

[0043] The exemplary webpage design platform module **140** comprises, but is not limited to, any webpage design platform module, system, or software accessible through the internet, Internet-of-Things or via any network. The webpage design platform module **140** is coupled with a processor **110** and may be accessible by a user **170** through a user interface **120**, **130** associated with the system **100**.

[0044] The exemplary processor readable storage medium **150** comprises, but is not limited to, any storage medium, memory device, memory system, data store, server, cloud-based server, or other storage system and is configured to store data, computer code, and information used by or generated by the system **100**.

[0045] In exemplary embodiments, the processor **110**, input device **120**, and display screen **130** are in wired or wireless connection. The exemplary storage medium **150** is configured to store data and/or computer code generated or used by the system **100** to facilitate functions, operations, and method steps described herein. The exemplary system **100** is configured to communicate with other devices or systems through at least one telecommunications, data, or wireless communications network **160**. The exemplary webpage design platform **140** may comprise computer code stored on the medium **150** or the platform **140** may be embodied in another storage medium accessible by the system **100** through the network **160**. However, the present general inventive concept is not limited thereto.

[0046] In exemplary embodiments, the system **100** is configured to generate from the webpage design and structure **180** computer code or webpage output language **190** from the webpage design and structure **180**. In exemplary arrangements, the system **100** is configured to generate webpage output language **190** in the form of HyperText Markup Language (HTML) for the structure and content of the webpage. The system **100** is configured to generate webpage output language **190** in the form of Cascading Style Sheets (CSS) to control the visual presentation of the HTML elements and to determine the color, fonts, layout, and spacing. The system **100** is configured to generate webpage output language **190** in the form of JavaScript to enable interactivity between various webpages and to enable dynamic behavior such as responding to user actions (for example, clicking and hovering over portions of the webpage), manipulating page content, creating animations and effects, and communicating with other services or electronic devices. In alternative exemplary embodiments, the system **100** is configured to output webpage output language **190** in the form of Server-Side Language (for example, PHP, Python, Node.js) to process data on the web server, interact with databases, handle user input, and generate dynamic content, as well as build web applications, create user accounts, and manage e-commerce transactions. However, the exemplary, webpage output, languages are not limited hereto, and the exemplary system may use or generate a plurality of different types of webpage output languages to properly code the webpage design and structure. However, the present general inventive concept is not limited hereto.

[0047] As shown in FIG. **2**, an exemplary method **200** of using the system **100** is provided. In exemplary method **200**, a user **170** has already created a webpage design and structure **180** which the user **170** intends to have converted into computer code or webpage output code **190**. However, in alternative embodiments, the exemplary method **1000** includes the steps of a user **170** creating a webpage design and structure **180**.

[0048] At step **202**, system **100** receives and/or analyzes the webpage design and structure **180** and stores data corresponding to the design and structure **180** in the storage medium **150**.

[0049] At step **204**, system **100** generates, using artificial intelligence, computer code **190** corresponding to the webpage design and structure **180**.

[0050] At step **206**, system **100** stores the computer code or webpage output language **190** in the medium **150**.

[0051] In alternative embodiments, system **100** is configured to access artificial intelligence

software to generate the computer code or webpage output language **190**. However, in still other embodiments, system **100** utilizes its own processor readable code to convert the webpage design and structure into computer code without the need for an artificial intelligence application.

[0052] In alternative embodiments, system **100** is configured to access the webpage design platform known as Figma to enable users to create and build a webpage through the system **100**. However, system **100** is configured to work in conjunction with any webpage design platform, system, or software.

[0053] In alternative embodiments, system **100** is configured to convert the webpage design into any type of computer code or webpage output code or language, for example, HTML, CSS, Javascript, or Server-Side Language. However, the present general inventive concept is not limited thereto.

[0054] In alternative embodiments, the exemplary system **100** is configured to communicate with Amazon Web Services® (AWS) and Google Cloud Platform® (CGP) for cloud computing services and storage. In this way, the exemplary system **100** is equipped with a plurality of virtual servers, having various resources for use on demand, including CPU, RAM, and storage. Exemplary system **100** is further equipped with serverless computing in order to run code without managing servers, and system **100** is configured to deploy and manage containerized applications. Further, the exemplary system **100**, in communicating with AWS and GCP, is enabled to store and retrieve large amounts of data, provide high-performance storage for applications needing low latency access, and store and analyze massive data sets for business intelligence. However, the present general inventive concept is not limited hereto.

[0055] In alternative embodiments, the system **100** includes a user interface for the user **170** to interact with the system **100**. The user interface may be displayed to the user **170** through a web-based system platform module **140** which may include a series of webpages. However, the present general inventive concept is not limited hereto.

[0056] In alternative exemplary embodiments where the webpage design platform **140** comprises Figma®, the system **100** may include the webpage design platform **140** as a plugin to the system **100**. In such embodiments, the system **100** enables data extraction. In addition, the system **100** enables a web-based user interface builder component that allows users to manage and modify the user **170** processed designs after conversion from the webpage building module **140**, for example, Figma® to webpage output language **190**. This provides the user **170** with the ability to preview, edit, and customize the generated computer code or webpage output language **190** through an interactive web-based interface. The user **170** is provided with the ability to make post-processing adjustments to their designs without needing to return to webpage design platform **140** or another webpage design platform **140**, or to modify code directly. That is, the user is enabled to make changes to the design and structure **180** of the webpage after the computer code or webpage output language or code **190** has been generated, and the system **100** is configured to change the generated output language or code **190** to include the post-generation user changes to the design and structure **180**, in real time or close to real time. However, the present general inventive concept is not limited hereto.

[0057] FIG. **3** is a flowchart of a method **300** of using a system **100** for building webpages according to another exemplary embodiment of the present inventive concept and FIG. **4** is a flowchart of a method **400** of using a system **100** for building webpages according to another exemplary embodiment of the present inventive concept.

[0058] As shown in FIG. **3**, an exemplary method **300** of using the system **100** is provided. In exemplary method **300**, at step **302**, the system **100** obtains a design layer data of a website.

[0059] At step **304**, system **100** uploads the design layer data of the website to a database **150**.

[0060] At step **306**, system **100** validates the design layer data.

[0061] At step **308**, system **100** reorganizes and redefines design elements from the validated design layer data.

[0062] At step **310**, system **100** obtains a screenshot of each of the redefined design elements.

[0063] At step **312**, system **100** sends the redefined design elements and the corresponding screenshots to an artificial intelligence visual language model.

[0064] At step **314**, system **100** uses the artificial intelligence visual language model to generate structured mock-up of the website design.

[0065] Lastly, at step **316**, system **100** generates html/css code based on the structured mock-up of the website design

[0066] As shown in FIG. **4**, an exemplary method **400** of using the system **100** is provided. The present embodiment of the method **400** is similar to the previous embodiment, but further includes using the system **100** to convert the generated html/css code into exportable data.

[0067] In exemplary method **400**, at step **402**, the system **100** obtains a design layer data of a website.

[0068] At step **404**, system **100** uploads the design layer data of the website to a database **150**.

[0069] At step **406**, system **100** validates the design layer data.

[0070] At step **408**, system **100** reorganizes and redefines design elements from the validated design layer data.

[0071] At step **410**, system **100** obtains a screenshot of each of the redefined design elements.

[0072] At step **412**, system **100** sends the redefined design elements and the corresponding screenshots to an artificial intelligence visual language model.

[0073] At step **414**, system **100** uses the artificial intelligence visual language model to generate structured mock-up of the website design.

[0074] At step **416**, system **100** generates html/css code based on the structured mock-up of the website design.

[0075] Lastly, at step **418**, system **100** converts the generated html/css code into exportable data.

[0076] Although a few exemplary embodiments of the present general inventive concept have been illustrated and described, it will be appreciated by those skilled in the art that changes may be made in these exemplary embodiments, and combinations of the features and relationships of the various embodiments may made to form new embodiments, without departing from the principles and spirit of the general inventive concept, the scope of which is defined in the appended claims and their equivalents.

## Claims

**1**. A system for building a webpage, comprising: at least one processor configured to execute processor executable instructions, and a non-transitory computer-readable storage medium including processor executable instructions, wherein when the processor executes the instructions, the processor is operative to: receive data corresponding to a webpage, wherein the webpage has a design and a structure, analyze the webpage design and structure, generate computer code corresponding to the webpage design and structure, and store the computer code in the non-transitory computer-readable storage medium.

**2**. The system according to claim 1, wherein the system is configured to use artificial intelligence software to analyze the webpage design and structure.

**3**. The system according to claim 2, wherein the system is configured to use artificial intelligence software to generate the computer code corresponding to the webpage design and structure.

**4**. The system according to claim 3, wherein the artificial intelligence software includes at least one of ChatGPT, Google Gemini AI Models; and OpenAI GPT.

**5**. The system according to claim 4, wherein the processor is configured to communicate the stored computer code.

**6**. The system according to claim 5, wherein the processor is configured to communicate with at least one webpage design platform, and wherein the processor is configured to receive the webpage

design and structure from the webpage design platform.

7. The system according to claim 6, wherein the webpage design platform comprises Figma.

8. The system according to claim 7, wherein the system is configured to convert the webpage design and structure into at least at least one of a plurality of webpage output languages.

9. The system according to claim 8, further comprising: a user interface, wherein the user interface enables a user to make changes to the webpage design and structure.

10. The system according to claim 9, wherein the user interface enables a user to make changes to the webpage design and structure after generation of the computer code corresponding to the webpage design and structure.

11. The system according to claim 10, wherein when the processor executes the instructions, the processor is further operative to: automatically update the generated computer code with computer code corresponding to the user changes to the webpage design and structure.

12. A method of building a webpage, comprising: receiving, by a processor, data corresponding to a webpage, wherein the webpage includes a design and structure; analyzing, using the processor, the webpage design and structure; generating, using the processor, computer code corresponding to the webpage design and structure; and storing the computer code in a non-transitory computer-readable storage medium.

13. The method according to claim 12, further comprising: using artificial intelligence software to analyze the webpage design and structure.

14. The method according to claim 13, further comprising: using artificial intelligence software to generate the computer code corresponding to the webpage design and structure.

15. The method according to claim 14, wherein the artificial intelligence software includes at least one of ChatGPT; Google Gemini AI Models; and OpenAI GPT.

16. The method according to claim 15, wherein the processor is configured to communicate the stored computer code.

17. The method according to claim 16, further comprising: communicating, using the processor, with at least one webpage design platform, and receiving the webpage design and structure from the webpage design platform.

18. The method according to claim 17, wherein the webpage design platform comprises Figma.

19. The method according to claim 18, wherein the computer code corresponding to webpage design and structure is in at least one of a plurality of webpage output languages.

20. The method according to claim 19, further comprising: after generation of the computer code, automatically updating the generated computer code with computer code corresponding to user changes to the webpage design and structure.