INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.488

HTML Code Generation from Mock up Images Using Machine Learning Techniques

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ABSTRACT: Automatic is the mechanism to replace the human intervention in any process by the machine. Here the authors have considered the automation within the area of programming where researchers have tried to ease up the work of programmer by providing different tools and techniques to generate the programming code. The designing of a website starts with building mock-ups for development tools. Then mock-up are transferred into structured HTML or computable labelled code by programming engineers. It's common practice for developer to transform a web page mock-up into code. This method is generally repeated on various more occasions until the right design is formed. Sadly, this procedure is complicated and tedious.

KEYWORDS: HTML, Mock-ups, Machine Learning, Dataset, K-Nearest Neighbours.

I. INTRODUCTION

The importance of the web website has increased considerably thanks to the progress made in today's technology. lately sites mirror the essence of the states, organization, network, individuals, etc. the knowledge Technology field is ever-evolving. Truly, the devices utilized by engineers are reliably getting all the more impressive, supportive and therefore the results quality is additionally expanding. On the opposite hand, official organisation except to supply progressively productive sorts of assistance. Most present-day user facing software programming application are GUI (Graphical User Interface) driven, and depend on alluring interface (UI). The front-end of each site could also be a "web page" which is that the piece of the situation that grabs the attention of the highest user. it's essential to serve a page that grabs the eye of the top user, it's simple, but difficult to utilize and has enough effective nature. In any case, creating pages that react effectively to those necessities includes a difficult approach. within the development of sites, graphic designer, software specialist, end users, corporate specialist and individuals utilized during a wide selection of territories required to cooperate. Normally, the procedure begins with the counterfeit up the structure of the UI by the graphic designers, according to the necessities of the organization. Programming specialists composes code for website pages hooked in to these drafts. Sites made by organizations proceed for monetary explanations behind items showcasing or promoting purposes. the next pages may change enthusiastic to response got by the highest users. This process includes many repetitive work. We rewrite the code for segments has the same functions and continuous evolution in page structure makes is extremely boring process. Many start-up companies create software prototypes to point out case their ideas and ensure investor support would likewise significantly profit by quickly applications prototyping.

In this study, an approach has been created to automatically produce the HTML code for the mock-up of an internet site page. it's planned to perceive the parts made within the mock-up images and to encode them as indicated by the online site page hierarchy. we will use the dataset from pix2code paper for generating bootstrap websites. By utilizing Twitter's bootstrap, we will merge. HTML and CSS and diminishing the dimensions of the vocabulary. The deep neural network model including K Nearest Neighbours (KNN) is employed to coach the pictures present on the info sets.

II. LITERATURE REVIEW

An algorithm named Reverse Engineering Mobile Applications interface (REMAUI) finds the weather of the UI a mobile application for instance buttons, text-boxes and pictures, it makes the code for them from the Screenshot of an application window [1]. It transforms to the code from the screen pictures or drawings for mobile platforms, PC vision and optical character acknowledgment techniques are utilized. Despite the actual fact that the REMAUI [2] strategy works effectively, it doesn't assist cross-page change and animations inside the page Creators built up the P2A [3] algorithm to cure the lack of the REMAUI calculations.

Creator built up the pix2code algorithm which excepts to change over the graphical interface for a website page to structured code using deep learning with convolution and repetitive neural networks [4].

In the first phase of their implementation PC vision procedures are utilized to differentiate singular GUI components. The second phase include the order of the recognized components as indicated by their functions, for example, toggle buttons, text area, etc .Right now, Convolution Neural Networks are utilized. In the last phase, the XML code is produced by joining the K-Nearest Neighbour's (KNN) algorithm as indicated by the web programming hierarchy. These days open source libraries, for example, GitHub [1] are utilized very common to share code and applications. The common codes in these libraries lesson a similar code being composed again and again by various individuals.
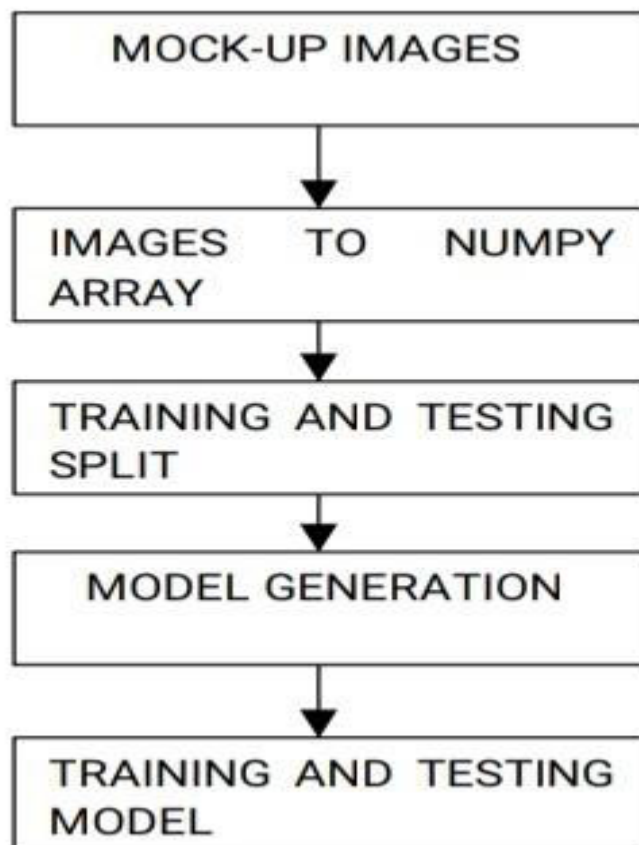
III. PROPOSED SYSTEM

Fig.1. Proposed System Of Mock-up Image

Producing computer code written in a given programming from a mock-up image can be differing with the undertaking of creating English printed sketch from scene photography. In the two situations, we'd like to deliver a variable -length series of tokens from a pixel value. We would thus be ready to partition our concern into three sub- issues.

Initial, a computer vision issue of understanding the given scene (i.e. HTML picture) and inducing the item present their personalities, positions, and poses (for example buttons, labels, component).Second, displaying issue of getting content a a language (for example code) and producing grammatically and semantically right examples. The last test is to utilize the answers for both past sub-issues by exploit the inactive factors derived from scene comprehension to produce relating textual description (for example PC code as opposed to English) of the articles characterized by these factors.

IV. METHODOLOGY

This study was administered in four basic steps. In the first step, object detection was applied on the input image with image processing techniques such as erosion, dilation and contour detection. After this stage, the identified objectives were cropped and then the components obtained were labelled with the trained KNN model. Finally, the output of this model has been converted to HTML code through the HTML builder script.

Object Detection and Cropping:

After reading the input file, it is converted to grey scale format. Then, Gaussian Blur was applied two times to them with 3*3 rectangle kernel. After the threshold process was carried out, rectangle was drawn by applying the contour detection algorithm to determine the objects by applying morphological transformations. In this way, the components in the input image have been detected. The detected components were cropped to be transferred to the KNN model.

Object Recognition:

As mentioned before it consists of four different types of components such as textbox, dropdown, buttons and checkbox. After the stage of training the model, the loss function was trained for 200 epochs using binary cross entropy and RM- S Prop algorithms by setting the batch size to 64. Afterwards, component recognition a process was carried out by giving the cropped components that came from the previous stage as input. We put several convolution layers with 4*4 kernels and then we applied max pooling processes with 2*2 kernels for the features extraction purpose. After the process that we I call as vectorization of the feature we put BILSTM layer for catching correlation of the extracted features.

HTML Builder:

Recognized component were successfully translate into HTML code via the bootstrap framework. It was performed with the help of the coordinates from the result of the contour finding algorithms.

First we created the templates for the header and footer. Second, we detected how many items there are on each of the rows with Coordinates of the components. Then we mapped the labels of the components to their templates codes. At the end of this process the body section of the HTML code was successfully obtained. Finally the header, body and footer sections were combined also. So, the final HTML code was composed.

V. CONCLUSION

Transforming websites mock-ups into mark-up code with less time along with development cost has been a crucial point. In this paper, we develop an approach which accepts webpage mock-ups, process them and generate structured HTML code. A dataset comprising a pictures, including different mock-ups webpage structure were utilized. This dataset used to train the KNN Model. Although our work exhibits the capacity of such a framework to automate the procedure of executing GUIS, we just started to expose what is feasible. Our model generally not many limitations and prepared on a comparable little dataset. The nature of the created code could be definitely enhanced via preparing a greater model on altogether more information for an increasing count of time span.

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