

Wire2Code

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Abstract : The major obstacle in developing any web based product is the prototyping of the desired wire-frame. Rather on core logical features, programmers tend to focus and spend large amount of time on repetitive task of UI implementation. Thus, we can automate the task of UI prototyping just by feeding a snapshot of designed wire-frame to the model. Image recognition through machine learning models automates the process of implementing wire-frames into HTML or styled HTML codes. The precision and recall factors have been calculate as per the element classes. The image class has the highest precision factor succeeded by input and button classes.

Keywords—Wire-frames, CNN, UI

I. INTRODUCTION

Fundamental step in creating any web based application is the HTML code. Basic Prototyping of the whole project starts designing the User Interface on paper, and then implementing the prototype to get basic insight of the design. This creates a wide gap between the designed model and basic usable interface. The basic steps are usually repetitive, thus we eliminate the repetitive process. This overcomes a huge gap between a common user and a professional web developer. The process of project developing starts from drawing a rough sketch of a wire-frame depicting outlines and sections of the webpage. This project creates an application which transforms the rough wire-frames sketches into basic HTML codes with some bootstrap styling using Machine Learning and Artificial Intelligence. This project involves major challenges such as

- Developing a machine learning model which performs:
 - Detection of the wireframe elements drawn on the paper
 - Eliminating human errors from designs
 - Transforming wire-frame into actual code
 - Simplified output to the user

- Creating Datasets involving actual design and their respective tokens
- Measuring the accuracy and performance of the model

II. PROGRAMMING METHODOLOGY

A. Overview

Implementing client-side interface depending on the design mock ups i.e. the wire-frame created by the developer. It is very time consuming as the major time is wasted on designing the user interface rather than focusing on actual logic and methodology of the application. Most of the languages are domain specific languages (DSL) like programming languages, markup languages. They are developed for specialized usage. Therefore, using domain specific languages can limit the complexity of the language which needs to be modeled. The project incorporate with the convolutional neural networks, long short term memory model and recurrent neural networks.

B. Basic Model Architecture

The first phase is the training of the vision model and with the help of tokens generated, Sampling is performed which encompasses the second phase. For the training phase, the context and the wire-frame is provided to the LSTM and convolutional layers then the output vectors are provided as input to the second LSTM layer which actual acts as a decoder.

The sequence of tokens which are encoded related to the domain specific language code is encoded by the LSTM language model. The process is repeated on a stack of LSTM layers. The sampling is performed with the help of softmax layer. The previous predicted output is used with the current input for accurate predictions. The output of the training phase is the DSL generated tokens. The ampling phase takes the same input as the training without prior contexts.


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