

WeBase: Create and Deploy Websites in 5 Clicks Powered by Deep Learning

Category: Productivity

INTRODUCTION

It is an undeniable fact that everyone in present day modern world is moving towards the digital space i.e online. 24.3% of India's population i.e 323 million people alone joined the internet in the year 2016. In the coming years the number of people joining the internet every year is only going to go higher. Everyone is shifting from their physical addresses to the new virtual addresses.

What are these new virtual addresses? **The new virtual addresses are 'Web Applications' and 'Mobile Applications'**, which are modern day billboards and commercial stores combined, open 24/7.

Top consulting firm *Mckinsey* had recently - in a survey conducted by them – valued the **Internet Economy** at a staggering \$9 trillion. With the massive ongoing transition in India, with more and more people joining the internet and massive valuation of the **Internet Economy**, opportunities are available in galore and companies/people exploiting these opportunities are very few. Therefore, our team would in particular be creating solutions for problems in this **Blue Ocean** to maximize returns and gain first-mover advantage.

PROBLEM STATEMENT

We've already mentioned in the Introduction section why moving to the internet is more relevant than ever and why 'Web Applications' and 'Mobile Applications' are the backbone of the internet. We've categorized organizations/people into two categories who are facing problems due to this new paradigm of internet or are lagging behind due the same:

1. **Consumers of Web Applications:** Difficulty faced by small businesses, local traders and individuals with no technical background to create a website to showcase their product or service that looks similar or exactly

like their requirements - *More than 50% of small/medium-sized businesses in India do not have their own website.*

- 2. Producers of Web Applications:** Large amount of time consumed by small/medium-sized businesses and individuals with technical knowledge to develop a template of website that looks similar or exactly like their requirements thus obstructing rapid prototyping and slowing down process of application development/ lowering productivity.

We'll be focusing on solving these two problems particularly using our software solution.

SOLUTION

We'll be creating a consumer product, a Web Application powered by Deep Learning using which **any person right from age 10 to age 75, regardless of the level of technical knowledge he/she possess can create a website as detailed as one created by a professional website developer in matter of minutes, with just 5-click of buttons.** We are calling this web application **WeBase**.

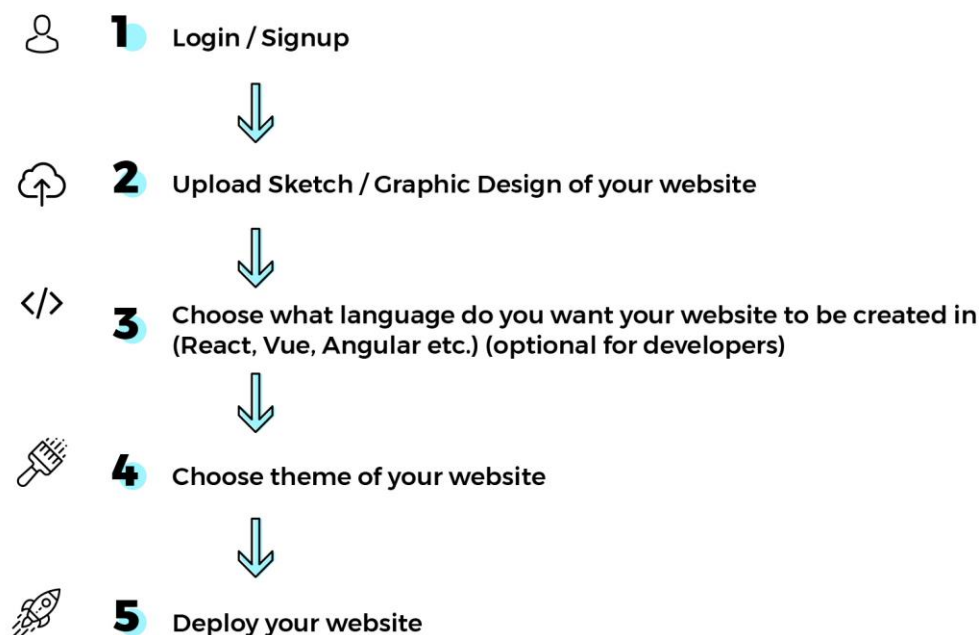
Features:

- **User Management:** Hierarchy among users – Regular Users and Premium Users (We'll be using freemium model to generate revenue). User Management helps store each website template created by a user in his/her respective repository so that he/she can reuse the template in future.
- **Create Website Template:** Users can create a website template using 4 simple steps:
 - a) Users can either use screenshot of the hand drawn sketch of the design of how they want their website to look like or screenshot of an existing website whose design they want to replicate and upload it on **WeBase** as step one.
 - b) Users can then select the theme of how they want their website template to look like ex: Dark Theme, Light Theme, Facebook Theme, etc. These themes act like Instagram filter but for websites.
 - c) Users edit the content of the website template according to their business needs (No exposure to any sort of code whatsoever, everything is visual in this step).

d) Users (this step is particularly for developers and designers) can take decision if they want the codebase of their website to be in html (default) or React, Vue, Angular, etc.

- **Deploy Website:** After generating website template using **WeBase**, users have the option to deploy their website in a single-click using our in-house deployment solution (website url of user appended after **WeBase's** url) or using third-party deployment options provided by **WeBase** (source of affiliate earning for **WeBase**).
- **Edit Existing Website Template:** Users can revisit website templates created by them previously using **WeBase**, stored on their **WeBase** repositories to edit their content (and deploy them, if not already deployed).

Working of 5-Click Website Template Creation and Deployment:



Step 1: User Registration/Authentication using server i.e Flask.

Step 2: Image of hand drawn sketch/Image of website is converted into working HTML code using Deep Learning model which uses Image Captioning Architecture to perform the same. The Image Captioning

Architecture has three parts:

- a) A computer vision model that uses a Convolutional Neural Network (CNN) to extract image features from the source images.
- b) A language model consisting of a Gated Recurrent Unit (GRU) that encodes sequences of source code tokens.
- c) A decoder model (also a GRU), which takes in the output from the previous two steps as its input, and predicts the next token in the sequence.

Deep Learning model is created using Keras with TensorFlow as backend.

Step 3: Theme of the website template is manipulated by tweaking CSS stylesheet.

Step 4: User can edit content of the website template without getting exposed to the underlying codebase using Froala's WYSIWYG HTML Editor.

Step 5: Conversion of HTML codebase into other frameworks is done using libraries ex: npm's react-html-converter library used to convert HTML codebase into React's codebase.

Step 6: Website deployed using **WeBase's** in-house deployment solution.

To provide proof-of-concept of our proposal we've created a prototype of web application consisting of most of the features mentioned above. The README file of the attached GitHub repository also includes steps to setup the project and a Youtube link to our working model:

GitHub Link: <https://github.com/harshitsinghai77/amdocs-2019-prototype>

Powerpoint Presentation Link: <http://bit.ly/amdocppt>

TECH STACK

- **React** – Used for creation of frontend to ensure scalability and good design. Virtual DOM feature of React is one more reason for choosing it.
- **Flask** – Used for server programming and for effectively and easily deploying of Keras model. Extremely scalable.
- **MySQL** – Used as database and due to the fact that not a lot of data requires storage.
- **Keras** – Used for creating sketch-to-code and screenshot-to-code deep learning model
- **Froala WYSIWYG Editor** – Used to edit codebase of website generated by Deep Learning Model.
- **Heroku** – PaaS used to deploy our web application allowing it to be extremely scalable.

UNIQUE SELLING POINTS

- 1) 100% original and innovative solution for making creation and deployment of websites extremely efficient and quick (matter of minutes). There is currently no product remotely similar to **WeBase** in the market.
- 2) Companies like Wix, SquareSpace, etc. are direct competitors of **WeBase** but unlike drag and drop options provided by these companies to create websites – which can be restricting, time consuming and still technically challenging for some people – **WeBase** offers users the ability to simply sketch their thoughts of a perfect website on a piece of paper and then convert it into a website – which is a simpler, non-restricting and faster solution.
- 3) **WeBase** has a robust Revenue Model:
 - a) **Freemium Model by creating hierarchy of users.**
 - b) **Affiliate Earning by allowing third-party deployment solutions on its platform.**

