

Technologies Being Used in Web Development

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Abstract— Net development can use CMS (content management systems) for creating content changes easily with help of technical skills. This paper has critically reviewed existing resources regarding technologies being used in web development. In this paper, the roles of different web technologies have been reviewed in case of web development. This paper has identified few web technologies including front-end and back-end development and some these are Python, NodeJS, JavaScript, Django and Flask. All these technologies have significant role in web development. Based on the data of existing resources, the paper has concluded that successful implementation of these technologies can effective change a websites interface and make it attractive to users, while transform trash website to treasure.

I. INTRODUCTION

Background

“Web development” is the way of making people aware of products or services an individual or a company offers and help them to understand the relevance and necessity of that product. Having an appropriate web development technology can effectively improve a website [1]. Web development refers to many non-design aspects of making a new site. In large businesses and organisations, the group of net development can incorporate several folks and consider customary ways including agile methodologies and development of internet sites [2]. Internet sites including Twitter and Facebook provide users a platform for speaking with many personal and interacting general people.

Aim and objectives

The review paper aims to discuss the role of various technologies that are used in web development. The objectives are mentioned below.

- To analyse different technologies used in web development
- To analyse existing resources associated with discussion regarding technologies utilised in web development
- To discuss the benefits and challenges of using latest technologies in web development

II. LITERATURE REVIEW

Web technology refers to the ways devices or computers communicate with others by utilising mark-up languages. This is the communication throughout web and it creates, delivers and manages web content by utilising HTML (“hypertext mark-up language”). Web technologies are divided in line wherever they are used. Some common categories of web development technologies include web service, protocols, databases, programming language, CSS

and HTML and browsers [3]. These technologies are divided into four types including frontend, backend, “website development methodologies” and “web app development”. Front-end technologies include JavaScript and NodeJS. JavaScript is the Scripting language and it is a higher-level artificial language, which utilises thought of “Object-oriented programming (OOP)”; however, it supports epitome inheritance [1]. Additionally, NodeJS is the cross-platform, open-source back-end “JavaScript runtime”, which runs on V8 engine. It executes codes of JavaScript outside web browser. These are mainly utilised for event-driven, non-blocking servers, because of its single-thread nature [3].

Additionally, backend development pays attention to server-side aspects about web applications or web sites. This web development technology incorporates everything that user do not see as well as it holds behind-the-scenes activities, which happen while performing actions on websites. It pays attention to databases, servers, APIs (“Application Programming Interface”) and backend logic [2]. Back-end codes permit communication among data and browsers from databases. This web development is working with front-end development technologies for supplying users with interactive and useful expertise. Some major examples of backend technologies are Ruby, Python, PHP, Java and Flask. “Web-site Development Methodologies” are employed for managing website development methods. This type of web technologies has different phases of implementation such as discovery stage, implementation stage, phase of quality assurance, and deployment [3]. Finally, the last web development technology is web application, which is again classified into two different types such as frontend development and backend development. Front-end development is that part of the website, in which users interact directly and it is remarked due to “client side”. It incorporates everything, which users directly expertise in including designs, text, images, graphs, tables, buttons, navigation and colours [4]. In this development, JavaScript, CSS and HTML have been used. Additionally, the backend

development arranges and stores knowledge and creates positive everything upon the client-side of the website.

III. METHODOLOGY

In this review paper, data has been collected from secondary data sources on the selected topic. In order to collect relevant existing data, this review paper has used some databases including Google Scholar [5]. Additionally, it has formulated some keywords based on the research topic

for example, “web development”, “web development technologies”, and “frontend and backend development”. By using these keywords, it has searched relevant resources on selected data to do an appropriate data analysis. In order to search for appropriate existing resources, it has selected a unique search strategy, where it has connected the keywords with Boolean connectors like AND, OR.

IV. DATA ANALYSIS

Table 1: Data Extraction table (Review)

| Author | Findings | Limitation |
|---------------------------|--|---|
| Vyshnavi and Malik (2019) | Regarding successful web development, Python and Flask can be beneficial. With the help of Python different hand gestures can be developed. Finding showed that an effective development of web page can efficiently attract users and convert a trash website to treasure | In this article, only positive sides of Python and Flask have been discussed; however, in order to discuss the technology completely, it is important to consider both the negative and positive sides of it. Thus, it is a major limitation of this paper. |
| Ghimire (2020) | The study compares the two web frameworks of Python: Flask and Django. Findings highlighted that in case of successful web development in large-scale project, Django can be worked more efficiently | Key limitation of this study that paper does not discuss Python's each framework's features and it requires highly detailed companion before giving drawing an appropriate conclusion |
| Carter (2020) | Findings showed that regarding communication in web development websites can consider a content model that will place between encoding of content and application logic | The key limitation of this paper it can it has discussed a lot of data from different sectors, that is why it could not draw an appropriate conclusion and clearly discuss the issue |
| Mehra et al., (2021) | The paper finds that MERN is ideal regarding web applications as it works with a huge amount of “pre-built connections” | This study compares MERN and MEAN; however, there are many aspects that require to be done and this is the reason it has been considered as a limitation |
| Schiavio et al., (2019) | In this paper, the role of NodeMOP in web development has been discussed. Results showed that NodeMOP helps in error recovery through allowing developers for defining custom handlers regarding property violations. | Regarding study limitation, it can be stated that there is a necessity of improving NodeMOP through defining “high-level domain specific language” for extending basic MOP syntax. |
| Aggarwal (2018) | This paper finds that in case of web development, utilisation of ReactJS can be beneficial because it can change information without subsequent page refresh. Regarding offering better user experience ReactJS could work effectively. | Key limitation is that use of JSX and inline templates prove to be extremely complex and can be tough tasks for developers |
| Ikkala et al., (2022) | The full stack JavaScript has proven beneficial for developing a web because it creates user-friendly, customisable, and user interface. | The major imitation of this research is that selection of search paradigm affects publishing and data creation phase that is why functionalities given by SAMPO-UI are depending upon the nature of the knowledge graph. |

Selected papers on this study topic have shown that technology in web development is beneficial to improve a web page because it helps people to design a certain image for attracting and generating customers; loyalty. Research has found that in the case of developing an appropriate web, Python has been proven effective because it can develop different hand gestures and this is a client-side technology [6]. Python can successfully create and display everything, which is required to attract and interact with end-users. However, another research has found amongst Python's different web frameworks, Django works more effectively because it can work in large-scale projects and help in developing web successfully [7]. Additionally, Flask is again best to work with small-scale projects and it can be set up and learned quickly; however, when this comes to manage maintenance, Flask needs more work as compared to Django [8].

Additionally, studies have found that besides Flask and Django stack, MERN and MEAN are other stack that is used for web development. MERN offers simple and fast development of mobile and internet applications victimising Java as the main element. It is composed of "MongoDB, ExpressJS, ReactJS, Node.js" [9]. In this context, two research papers have highlighted ReactJS and NodeJS. From the information, it can be stated that NodeJS is beneficial for web development because it helps in error recovery by letting developers define custom handlers regarding property violations. Additionally, NodeJS is the runtime setting that is capable of running any JavaScript upon a machine [10]. Additionally, ReactJS is the library, which facilitates making interface elements about "single-page internet applications". Research has found that ReactJS is effective in changing information without successive page refresh [11]. Finally, in web development, full stack JavaScript can offer user-friendly and customisable interface for users [12].

V. CONCLUSION

Web development is the way of making people aware of a product or service. This systematic review aims to discuss the role of different web technologies in terms of web development. In order to achieve this, the paper has tried to identify different web technologies and their role in web development. From this information, it can be concluded that different web technologies play various roles in web development and these technologies are perfectly distributed network atmospheres regarding polymorphic communication. The design issues of web applications look and implement codes that are running on the internet services as compared to running on desktop computers, mobile devices and laptops. Additionally, it can be concluded that the effective use of technologies can offer high quality web pages that can significantly attract new customers and achieve the goal of improving websites.

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