Chapter 9
Intelligence in Web Technology

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ABSTRACT

End users also start days with Internet. This has become the scenario. One of the most burgeoning needs of computer science research is research on web technologies and intelligence, as that has become one of the most emerging nowadays. A big area of other research areas like e-marketing, e-learning, e-governance, searching technologies, et cetera will be highly benefited if intelligence can be added to the Web. The objective of this chapter is to create a clear understanding of Web technology research and highlight the ways to implement Semantic Web. The chapter also discusses the tools and technologies that can be applied to develop Semantic Web. This new research area needs enough care as sometimes data are open. Thus, software engineering issues are also a focus.

INTRODUCTION

Implementing Intelligence in Web Technology collectively called Web Intelligence is a new research area which is in a crossroad of application of AI and IT over web as discussed in Wiki. This research area comprises of some more research areas like Information Retrieval (IR), web data mining, web data warehousing, semantic web etc.

Today web has become an inevitable part of mankind. Since its inception it has been improved dramatically. We mentioned web 3.0 or 2.0 or even 4.0, what these are? Yes, we suppose to clarify the differences between different web versions.

We, web users are now two steps ahead from mere static websites called Web 1.0. We are now expecting the new generation of web termed Web 3.0. According to web futurist Mr. Nova Spivak Web 3.0 is not a mere extension of Web 2.0, it's a new generation of web supposed to be in existence within 2010 to 2020. Web 3.0 is different from its ancestors in terms of Intelligence, openness, interoperability, a global database maintenance, 3D space generation, control of information etc. Means adding Semantic factors to web 2.0 will enable us to be closer to Web 3.0. Web 3.0 concentrates on machine-understandable data, whereas we are into the arena of human understandable

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data/document. Finally we will be adding intelligence to web and that will be Web 4.0, also called agent based system.

This chapter firstly will focus on the evolution of web technologies and the latest terminologies. Implementation of intelligence in web technologies involves engineering knowledge rather than data. So, the next part of the chapter will focus on the knowledge engineering part of it. Now, if knowledge is engineered, then selecting algorithms would be the next job of any team. So, the next sub chapter would be on survey of algorithms and selecting right tools and platforms to give a shape to the application. Then this chapter will highlight the application areas that can be benefited and finally, finding future research directions would be the focus. We also tried to highlight the accomplishments done by corporate giants and researchers over the years.

WEB TECHNOLOGY EVOLUTION

Before starting the discussion it is better to introduce the key person behind the web and semantic web. The person is (Professor, Knight) Mr. Tim Berners-Lee, inventor of WWW. He proposed W3 on 1989. The journey of web started from that point onwards. In 2001 he proposed web of data, semantic web. This is 10th year of semantic web theory. The theory itself has got some developments and different application areas are also in reality.

One more person we suppose to refer with honor is Mr. Nova Spivack, the web futurist, Entrepreneur. According to Mr. N. Spivack, semantic web is the next generation of web and will be in existence within 2010 to 2020. According to Mr. Spivac we already have started this journey.

Web 0.5: Journey started with Mr. Lee's vision. The concept of hyperlink came in the picture. Different so called static sites became the reality. This journey used to work with FTP, GOPHER, or say for example USENET. People became familiar with terminologies like HTTP, URI, HTML, and Web Server. Only information sites were on the scene without any standard technology, protocols and tools. Murugesan(2010) described the same as a summary.

Web 1.0: We got the flavor of Web 1.0 from 1990 to 2000. Starting from small organization to government bodies tried to publish information on the web. Some standards, protocols were in place on the peak moment of web 1.0 (considered within 1993 to 1996). Some accomplishments within these phases are Altavista being a small search engine, Yahoo being a small portal. This was the web with cognition. References Murugesan(2010) and Weber, Rech (2010) both mentioned this web with cognition and sites for publishing information only.

Web 1.5: We got some over web 1.0 and did not restrict ourselves to web 1.0. Developers added some dynamic features to web 1.0. This can be considered as a basic development of web 1.0 with tools and technology. Commercialization came in this phase with sites like Amazon, eBay etc. Microsoft launched Internet Explorer within this phase itself. We got something called CMS (Content Management System) with the advent of server side scripting languages and programming tools like Javascript, Java Applets, CGI etc.

Web 2.0: The era of read only web became a history. We wanted and got read/write web. That is not the web with cognition only. It is smart enough and completely a read-write web. User can read the content and write it as well. This was a new generation in comparison to Web 1.0 identified by O'Reilly in 2004. This type of web started its journey in 2000 and was there till 2010. The identified web 2.0 sites like del.icio.us, Wiki or myspace. Web 2.0 gave birth to the most interesting application called social networking like orkut, facebook etc. These are user centric sites. I mean without user no content in facebook. These contents are termed as User Generated Content (UGC). Over the time web users started blogging, tagging with the advent and improvement of web