

A Study on Web Standards Compliance for ActiveX Usage of Korean Shopping Malls

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Abstract

Recently, the web users are able to access to web pages in various access environments through various media. However, use of ActiveX and inconformity to the web standards prevent web pages from providing the web users the same functions and designs in various web browsers. In this study, the current status of ActiveX utilization and conformity to the web standards were investigated with the online shopping mall sites and governmental institutions which often employ ActiveX. The result showed that web pages of a number of shopping malls and governmental institutions still use ActiveX and are vulnerable to cross-browsing for not conforming to the web standards

Keywords: *ActiveX , Web Standard , Web Standard Diagnosis Tool, HTML 5*

1. Introduction

As various devices enabling to use the internet are developed and popularized, web pages are accessed through various operation systems and web browsers in various access environments. Hence, web pages that do not conform to the web standards are unable to provide the same functions and designs in various web browsers. In particular, many of the Korean web sites have been prepared by using non-standard technologies that work only in the Microsoft Internet Explorer. As a result, ActiveX is used nine times more in Korea than in other countries [1]. The web pages that do not conform to the web standards serve as obstacles for a smooth transition to various operating systems, browsers, and devices, and are often abused as hacking routes because the users install ActiveX without recognizing the risk.

In this study, the conformity to the web standards and the ActiveX utilization status were investigated with the web pages of shopping malls which are used by many users and which often employ ActiveX. According to the next-generation web standards (Plan for Promoting HTML5 [2]), the conformity to the web standards and the ActiveX utilization status of governmental institutions were also investigated. On the basis of the investigation results, the conformity to the web standards and the ActiveX utilization status of the web sites of the shopping malls and the governmental institutions were analyzed. Finally, conclusions and future studies were provided.

2. Theoretical Background

2.1. Web Standards and ActiveX

Corresponding The web standards refer to the standards defined by the World Wide Web Consortium (W3C), which is an international standardization organization. If a web page is developed by conforming to the web standards, the users of the internet in various

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access environment may use almost the same designs and functions on any operating systems or web browsers [3]. ActiveX is a technology used for the development of the components of reusable object-oriented software developed by Microsoft and refers to the combination of two technologies which are Component Object Model (COM) and Object Linking and Embedding (OLE) [4]. ActiveX is used to utilize the contents downloaded from WWW and mostly used to prepare a plug-in for Explorer. The utilization of ActiveX has enabled to use various functions beyond the role of a web browser. In particular, ActiveX has become an essential application for baking with various institutions in Korea [5].

3. ActiveX Usage Status and Web Standards Compliance

3.1. The Current Status of Domestic Shopping Malls

The category of Korean web pages in which the frequency of ActiveX utilization is dominantly high is shopping malls. Therefore, in this study, a web standard validator was used to investigate the current status of ActiveX utilization and the conformity to the web standards with the web sites of shopping malls in Korea. The subjects were the top 60 shopping mall sites found in the list of Rankey.com.

A web standard validator was used to identify the utilization of ActiveX with reference to the use of the <embed> tag and the <object> tag, a script ActiveXObject, an ActiveX extension (*.ocx, *.cab, *.dll), and an installation file extension (*.exe, *.msi) [7].

However, the validation was impossible because the collection engine was unable to collect the data in the cases where a character string is combined in <script>, the web page is moved to another address dynamically created by <script>, another web site is referred to by using <iframe>, and a “*.js” file of another web site is used.

Table 1 shows the current status of the utilization of ActiveX and the conformity to the web standards of the web sites of the shopping malls of Korea.

Table 1 . ActiveX Usage and Web Standards Compliance Status of Shopping Malls

Korean Shopping Malls Site	ActiveX	Installation Program	Web Standard Compliance	
			error	Warning
www.g*.com	0	0	2	1
www.s*.com	7	4	124	12
www.l*.com	0	0	2	0
www.l*.com	0	0	3	0
www.c*.com	176	0	3	2
www.h*.com	0	0	1	0
s*.s*.com	7	0	29	10
www.a*.com	2	0	22	4
www.h*.com	0	0	6	3
www.n*.com	0	0	52	8
www.e*.com	0	0	2	0

www.n*.kr	70	0	105	12
www.o*.com	16	0	68	21
www.g*.co.kr	0	0	2	0
www.t*.com	4	0	1	0
www.m*.com	0	0	4	3
www.i*.com	0	0	104	59
www.t*.com	2	0	0	0
mall.e*.go.kr	1601	0	4	0
www.k*.co.kr	10	0	33	1
www.b*.co.kr	33	0	10	6
www.o*.com	268	0	68	4
www.d*.co.kr	4	0	3	0
www.y*.com	278	0	253	138
www.k*.com	9	0	3	2
www.b*.com	7	0	522	479
u*.k*.com	3	0	7	0
www.a*.com	8	0	725	276
www.s*.com	1	0	3	1
www.p*.com	0	0	291	21
www.j*.com	15	0	96	37
www.j*.com	0	0	59	1
www.k*.com	7	0	25	1
www.y*.co.kr	0	0	9	1
www.p*.co.kr	155	0	257	127
www.w*.com	5	0	834	167
www.e*.co.kr	7	0	433	86
www.u*.co.kr	0	0	207	297
www.b*.com	8	0	846	155
www.o*.com	7	0	4	1
www.i*.co.kr	0	0	2	0
www.u*.kr	7	0	731	270
www.f*.co.kr	3	0	999	2
www.a*.com	11	0	348	49
shop.l*.co.kr	0	0	3	1
www.n*.kr	3	0	734	178

www.e*.com	3	0	3	1
www.r*.co.kr	16	0	92	24
www.c*.co.kr	5	0	126	72
www.j*.com	19	0	842	159
www.w*.com	10	0	82	77
www.t*.com	13	0	13	3
www.z*.co.kr	0	0	114	8
www.b*.com	426	0	160	77
www.r*.co.kr	18	0	67	86
shop.e*.com	3	0	6	0
www.d*.com	0	0	252	52
www.d*.co.kr	3	0	117	97
www.s*.com	11	0	4	1
www.p*.co.kr	7	0	937	64
Sum	3268	4	10854	3157
Average	55	0.07	181	53

Table 2 shows the types of ActiveX detected in individual web sites. The most frequently used was Flash Object, followed by XML DOM Document.

Table 2. ActiveX Type

Type	No
Multimedia(Video and Audio)	22
No. of cab file usage	12
Container Definition for external program or Interactive Contents(plug-in)	224
No. of object tag without codebase	433
No. of Shockwave Flash Object	2005
No. of XML DOM Document	572
Total	3268

3.2. The Current Status of Korean Government Organizations

Table 3 shows the current status of the utilization of ActiveX and the conformity to the web standards of the web sites of the Korean governmental organizations [8].

Table 1 shows the current status of the utilization of ActiveX and the conformity to the web standards of the web sites of the shopping malls of Korea.

Table 3. ActiveX Usage and Web Standards Compliance Status of Government Organization

Analysis Tools WebPage	ActiveX	Installation Program	Web Standard Compliance	
			error	warning
The Government of the Republic of Korea	0	0	0	0
Government Organization 1	3	7	4	0
Government Organization 2	0	0	1	1
Government Organization 3	39	46	2	1
Government Organization 4	0	0	1	0
Government Organization 5	0	0	13	1
Government Organization 6	225	2	1	1
Government Organization 7	0	0	3	1
Government Organization 8	2	0	1	0
Government Organization 9	0	0	3	0
Government Organization 10	2	0	41	10
Government Organization 11	0	0	3	0
Government Organization 12	0	0	68	17
Government Organization 13	25	0	0	0
Government Organization 14	12	11	1	1
Government Organization 15	2	0	3	0
Government Organization 16	8	0	5	2
Government Organization 17	0	0	7	0
Government Organization 18	15	0	13	11
Government Organization 19	0	0	3	16
Government Organization 20	0	0	10	1
Government Organization 21	0	0	15	0
Government Organization 22	23	0	72	22
Government Organization 23	11	0	2	0
Government Organization 24	0	0	7	14
Sum	367	66	279	99
Average	15.291	2.75	11	4

Table 4 shows the types of ActiveX detected in individual web sites. The most frequently used was the type where a cab file is downloaded and installed, and the second was Flash Object.

Table 4. ActiveX Type

Type	No.
cab down	222
object tag no. without codebase	3
easykeytec.cab no.	5
Namo ActiveSquare no.	1
Shockwave Flash Object no.	78
XecureWeb Control no.	1
XML DOM Document no.	40
Multimedia(Video and Audio) no.	11
External Program no.	2
Veraport20	4
Total	367

4. Results and Discussion

Table 5 shows the current status of the utilization of ActiveX and the conformity to the web standards of the web sites of 60 shopping malls and 25 governmental organizations of Korea.

Table 2. Web Standards Compliance and ActiveX Usage Status

			Sum	Average
Web Standards Compliance	error	Shopping Malls	10854	181
		Gov.Org.	279	11
	warning	Shopping Malls	3157	53
		Gov.Org.	99	4
ActiveX	ActiveX	Shopping Malls	3268	55
		Gov.Org.	367	15.27
	Installation Program	Shopping Malls	4	0.07
		Gov.Org.	66	2.75

The inconformity to the web standards was higher in the shopping mall websites than in the governmental institutions. The average number of errors included in a web page was as many as 181. Therefore, the same web page looks slightly different in different

web browsers. ActiveX is used in 55 shopping mall web sites, and Flash Object was the most frequently used one. The web pages of the governmental institutions often used a .cab or an easykeytec.cab file for user identification. Flash Object was the most frequently used ActiveX also in the web pages of the governmental institutions.

5. Conclusion

In this work, modeling with HMLP network trained by MRPE algorithm has successfully been used to forecast the speed of a car. One type of vehicle data inputs namely injected fuel (litre/hour) was used. The only output is speed (km/h) has been used as HMLP network output data. From the results in the previous section, it has been proved that the HMLP network has successfully been modeled and validated. The model validations namely correlation test are used to evaluate the performance of the fitted models. The analyses have been proved by the significant information about the accuracy level of forecasting which is done by HMLP network. DHPF detrend method is selected as the best technique among the comparison to eliminate the dc shift effect that can cause major error in correlation test and forecasting. Correlation test results in this study demonstrate that the model is unbiased and adequate to represent the identified system.

The web pages which showed a lot of error with respect to the conformity to the web standards were shown differently in different web browsers, as the multimedia elements were not shown or executed or the screen design look different. In conclusion, the result of the present study showed that many of the web pages of Korea do not allow for cross-browsing, causing inconveniences to the users. Further studies may need to be conducted to develop a method of easily converting existing web pages into those conforming to the web standards by using “canvas,” “video,” and “audio” provided by the next-generation web standards, HTML5, so that cross-browsing may be allowed in various web browsers.

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