

A Mining Based Quality Evaluation and Prediction of Web Applications

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Abstract: The immediacy of the web creates a quick anticipation for the quality, but the technical complications of the Website make the quality control more difficult. Moreover many of the existing tools that appraise the web pages are not capable of evaluating the operation and quality of a webpage and amongst those tools most of them focus on predicting the functionality and accessibility characteristics of a quality model. Hence the Usability quality characteristics of the quality model have been analyzed and a study has been made on the quality metrics for the various websites. Based on the studied quality metrics, a training set has been made for predicting the quality characteristics of the websites using the various classification methodologies like Bayes theorem, Conditional probability, Tree induction etc. This paper mainly proposes a Quality evaluation tool for evaluating the usability characteristic and predicting the quality level of that characteristic through Bayes theorem and Tree Induction. This paper also promotes the **Gini Index** for proving the attributes taken here have fewer impurities.

Key words: Quality metrics • Bayes theorem • Tree induction • Gini index

INTRODUCTION

Web Engineering has got greater concern in web development. The taxonomic and cost efficient evolution of Web applications are concentrated by Web engineering. It effectively handles complications of the various web application developments. Among those web applications, there are applications that deal with similar set of contents, but their degree of quality differs. Here we are using two classifiers for quantitative measurement. Bayes, which interpolates between prior and posterior world models, has an associated language for making the task easier. Unlike other machine learning approaches, this machine learning technique gives the guarantee that success comes eventually. It involves integrating intuition with the specified prior world model. Variable screening and feature assortment are carried out for unreserved performance while using decision trees. Parameters cannot be disturbed by any non-linear relationship and helps the users to not find any difficulty for data preparation. Analytics, interpretation and execution can be easily done through tree induction method.

Quality is a significant factor to be discovered. As per [1] quality depicts the whim of degree which means it is an uncertain one. Therefore it defines the state

meant or required and the state achieved differences. Hence if the quality is poor, users would not appreciate it and they move to the other related websites. Therefore, it is necessary to analyse the quality characteristic of a website and improve it accordingly for having a large number of hits. As per [2] the Quality characteristic has been divided into its sub-characteristics and indeed each sub-characteristic is divided into either quality indicators or quality metrics.

It is the quality that builds a website with availability, usability and accessibility characteristics and also it puts up practicable and authentic information, providing good design, visual appearance and attractiveness to meet the users' needs and requirements. The definition of Usability as described in [3], includes it is a Quality attribute defined as: "The potentiality of the software to be inferred, learned and be appealing to the users when it has been used under particular discipline".

There are many factors which are to be considered during the evaluation of any particular website and a study is to be made out of which the concepts which are said to have an impact over the ultimate measure of the website quality [4].

Now-a-days launch of websites are getting multiplied by every fraction of a second, rendering a huge number of MDWE approaches [5] which extend a frame of references

for the Web environments. The MDWE methodologies like UWE (UML-based Web Engineering) [6], OOHDM (Oriented Hypermedia Design Method) [7], RUX-Method [8] or NDT (Navigational Development Techniques) [9], don't have any pragmatic experience or tool for analyzing the quality. The market for the software components to achieve its maturity requires some polish in its current stage which can be achieved through the consideration of certain quality attributes which has a high impact factor over the expansion of components [10].

This paper mainly focuses on predicting the Usability characteristics of a website using Bayes theorem. A tool has been implemented and used to substantiate this. A set of metrics like Ease-of-Operations, Images, Colour and Rich Content have been considered for measuring the usability of a website.

This paper is engineered into following sections: Section 2 represents the literature survey according to which some quality standards are analyzed. Section 3 consists of proposed methodology where Quality Compliance Framework has been discussed. In Section 4, the quality metric evaluation has been explained. The calculation part is demonstrated in Section 5. The Section 6 explains the Problem definition and also demonstrated the problem using Bayes theorem. Section 7 reveals the implementation of the quality evaluation tool with its related snap shots. In Section 8, the findings and discussion of this project is given for an example. At last, Section 9 and 10 provide a valuable group of conclusions and potential future work.

Literature Survey: E-learning organizations are candid, disseminated and interlinked but there is no good protective cover method to meet all the security issues. This problem is solved by a novel web engineering methodology. It was proposed to build the security measure in each and every levels of a System Development Life Cycle (SDLC) [11].

The reusable software components across the internet are the web services and these are anticipated to alter the prototypes of software development and their use. This work is more or less based on the current position and disputes of the technologies provided by the Web services [12].

In web engineering, both the agile and model driven approaches are attracting and erring to a lesser extent in code derivation respectively, but the consolidation of these approaches are hard. Here they depicted a method-independent approach by aggregating agile approaches with model-driven Web Engineering approaches [13].

Some of the existing websites flashing over the Web browser are developed as a result of web engineering procedure but they all have deficiencies in the semantic mark up. Hence this paper highlights a method to broader web engineering process based on XML to organise web pages that are semantically commented [14].

Web sites and its applications have to be evaluated for quality and compared with other WebApps. This paper aims at bringing out one such quantitative process that is robust, flexible and integral. Hence this methodology is known as Web-site Quality Evaluation Methodology (Web-site QEM) which proposes a systematic strategy to evaluate, analyze and compare the WebApps [15].

A user's concern in a web page is determined by the credibility factor. Factors such as the content, provider, accessibility, aesthetics and solution of technical problems can affect the credibility. Mostly the user estimates the credibility of the web page by seeing the aesthetic quality of a website within a few seconds. A study was carried on to assure the aesthetics factors that determine prompt assessment on web credibility [16].

The data presented on the internet are from various different roots. The survey shows that most of the Internet users use search engines to find particular information and also the users are not gratified with the execution of the current propagation of search engines because of these problems (slower retrieval speed, inadequate quality of retrieved results and jitter). Here discussed are the evolution of new techniques aimed to settle some of the problems linked with Web-based information retrieval [17].

The existing quality models are not able to sufficiently measure the quality attributes because of the large amount of reusable components used by the web applications and its diverse quality. Hence a framework for measuring quality attributes of web-based application systems are proposed [18].

For the user interface design process, usability evaluation is a progressively significant part. However, it can be expensive in terms of human and time resources and therefore automation is needed to enhance existing approaches. Here presented a survey of usability evaluation methods, formed according to a new classification that emphasizes the automation role [19].

Traditional software and web based approaches are distinguished in terms with principles and rules [20].

Product quality characteristics are mentioned with ISO 9126 standards and their possible improvements [21]. The number we arrive at when the frameworks and patterns are taken into consideration is huge and is still

counting. The users are given with a choice of frameworks satisfying their purpose and also that they should be provided with certain measured values for the quality services to help them choose the framework for a successful model [22].

There are a plethora of technologies available in the scenario of today's web world to retrieve information from the web world. The constantly used and the number of users using a set of technologies to retrieve the information they require from the web is surveyed and can be used for a better hit rate [23].

A service keyword "emphasis" is liable to take us across domains which might not be taken into the empirical studies also. We have to overcome the ambiguity in the word with a report through any research or survey [24].

There are many models available in the current scenario and we must be in a position such that the model we require is available readily or is a combination of frameworks and giving it to the user is required [25].

The web services are developing into a professional discipline these days rather than a experimental discipline. The mentioned fact proves the requirement about the study and map of the quality of services to be achieved in any web site to have the maximum quality [26].

The evolving nature of the web services and applications puts us into a situation such that the quality of services in maintained and also that the other quality services are eventually developed and also are satisfied [27].

The probability is of a considerable number when we take into account the influential services for users. The study is required to be made and must be arrived at more a clear idea to reach users of all domains [28].

The fact that is to be taken with high priority is that the attributes of the websites that people get attracted to

when they are onto a task. There was a survey taken on the same and it is evident from the survey that there exists a relationship between interface and the added features to attract the user. This relation was also found to be the most significant [29].

Proposed Methodology

Quality Evaluation: This paper mainly concentrates on the usability characteristics from the quality model under which it covers the quality sub-characteristics like Aesthetics, Ease of operation, Rich subject. From the quality sub-characteristics, the usability indicators are identified for evaluation purpose. Finally various web quality metrics are determined for each and every quality indicators specified. These quality metrics are measurable from every live web site. Hence the proposed tool will analyse the quality of the web sites based on the metrics chosen. Quality Evolution Methodology can be assessed not only by Qos but also to evolutes through other phases like visitors, users, developers and managers [30]. The availability of components in the market are huge in numbers which also can have their attributes and impact common by creation. The knowledge about the metrics of the component will help in using the component in the application where the use of it will be ranked high and the output can also be positively graded [31]. Web applications are available huge in numbers and the number available is constantly increasing through the days. It is a point to be considered that the applications use a very meagre amount of the methodologies which is evident in the lack of design and development in the design [32].

Using the Quality Compliance Framework (Fig.1), the quality sub-characteristics and its indicators and metrics are analysed as shown in Fig. 2.

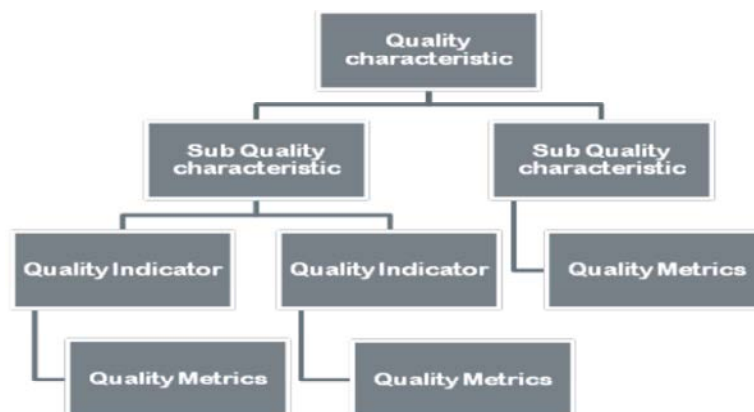


Fig. 1: Quality Compliance Framework (QCF) Ref [2]

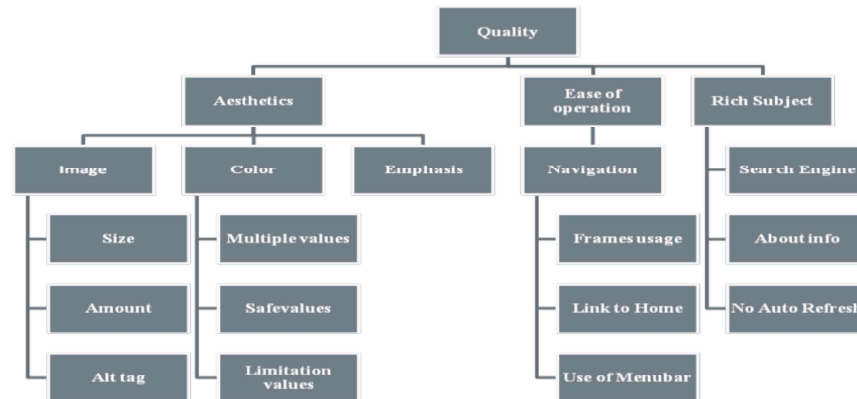


Fig. 2: Quality evaluation framework

Web Quality Metrics Evaluation: The measurement of quality of any website should be automatic checking the factors of high impact instead the use of tests which are empirical or heuristic in nature [33]. The assessment is also done in a large scale to check if the standards of the website match with that of the rules and evaluation criteria as provided by that of Scandinavian Web Awards [34]. An understanding towards the core quality of service, “usability” is a word to be technically understood by drilling down the technical literature of the word [35]. The most common examined attributes for measuring the quality of any site is maintained with a limit. It must be incorporated into a website in such a way that the services and their measures are automatically derived [36].

Aesthetics: Web applications are now omnipresent in the world of all communication and transactions which makes aesthetics a mandatory to have better performance [37].

Optical symbols like images, animations, video, colors etc are inherent part of a web application. Hence the visual aesthetics plays a significant role in the website usability measurement. The aesthetic sub quality characteristic conforms to any kind of websites. For example, people may expect a fair amount of aesthetic sense from entertainment web pages and also expect to have aesthetic charm from an educational website. It is calculated by three indicator values as

$$\text{Aesthetics} = 0.4 \times \text{Image} + 0.4 \times \text{Color} + 0.2 \times \text{Emphasis}$$

where, Image includes three metrics like size, amount and alt-tag in it. Colour includes three metrics LimitationV, MultipleV, SafeV in it. Emphasis denotes another metric. Points 0.4, 0.4, 0.2 indicate the weight for each indicator and the sum equals to 1. These measures (0.4, 0.4 and 0.2) are arrived by analysing various web sites’ look and feel.

Image is calculated by way of mean of three attributes (image size, amount and alt-tag).

Size metric represents that every image in a web page should be coded with a proportionate values for width and height attributes. If a webpage has values for these attributes then size=1 otherwise size=0.

Amount metric represents that only one big image is granted in one web page with a width and height ≥ 360 . If so then amount=1 else amount=0.

Alt-tag metric represents that every image tag must have an alt attribute specified with a description of that particular image. If so then alt-tag=1 else alt-tag=0.

Colour is calculated by the mean of MultipleV, SafeV and LimitationV.

MultipleV metric represents that a webpage should not use more than seven colours. If so then

$$\text{MultipleV} = 1 \text{ else } \text{MultipleV} = 0 \text{ [38]}$$

SafeV metric represents that a webpage should use the RGB triplet values as their color component values. If so then SafeV=1 else SafeV=0

LimitationV metric favours for color blindness people and it represents that a web page should not use (Red and Green) colors for framing titles, fonts, documentations. If used then LimitationV=0 else LimitationV=1.

Emphasis metric represents that in a webpage if there is any underlined text then it should only be a hyperlink. If so then Emphasis = 1 else Emphasis = 0.

Ease of Operation: A good usability web site should contain better navigability for the users to move around the website. This Ease of Operation sub quality characteristics include three measurable metrics for finding a navigation elements in a web site and those can be calculated as

$$EoP = 0.2 \times \text{Frame} + 0.4 \times \text{LinkH} + 0.4 \times \text{MenuB}$$

where, 0.4, 0.4, 0.2 denotes the *weight* for each metrics and the sum of it equals to 1.

Frame metric represents that every webpage should be equipped with frames and each should hold a set of navigable entities. If so then Frame = 1 else Frame = 0.

LinkH metric constitutes that all the pages in a web site should have a link to its home page. If so then LinkH = 1 else LinkH = 0.

MenuB metric constitutes that each page in a website must have a tabbed buttons. If so then MenuB = 1 else MenuB = 0.

Rich Subject: The contents provided in a web page mark the quality of a web site. It can be depicted that the rich subject is the accumulation of search engine, about information and any graphic features like refresh options. In order to calculate the rich subject quality value these metrics has to be calculated as

$$\text{RichSub} = 0.3 \times \text{AboutInfo} + 0.5 \times \text{SerEngine} + 0.2 \times \text{AutoRefs}$$

where, 0.5 is a weight given to SearchEngine, 0.3 is given for About Info, 0.2 is given for AutoRefs.

About Info metric constitutes that every web site should contain clear information about their web site's work and details. If so then About Info =1 else About Info = 0.

SerEngine metric represents that a good quality web site should contain a search Engine. If search bar is present then SerEngine = 1 else SerEngine = 0.

AutoRefs metric constitutes that an auto refresh option should not be present in a good quality website. If present then AutoRefs = 0 else AutoRefs = 1.

Methodologies Applied

Bayes Theorem: The classes taken in our study predict the degree of quality (usability, rich content) and those classes are poor, medium, good and excellent. The procedure starts with the following determination. Web-mining is a technique to be considered for achieving better results in the field of mining eventual data available in excess and is formed through certain empirical scenarios [39].

- The mean value for each column in the training set of the measured data is calculated such that the evaluation will optimize the determination.
- The probability for each class to occur is discovered as

$$P(\text{class}) = N(e) / N(s)$$

N (e) = sample space of the required class

N (s) = sample space

- The general formula for Bayes theorem is,

$$P(A/B) = \frac{P(B/A) * P(A)}{P(B)}$$

Tree Induction: The same training set is used for predicting the quality using Tree Induction method. The procedure used is Table 2. Metric Calculation. The mean value for each column in the training set is calculated such that the evaluation will optimize the determination.

- The general formula is applied on the values of the training set,

$$\text{Gain} = -\sum_i P_i \log_2 P_i$$

Frequency of each class is used as a probability estimate.

Gini Index: The Gini index also uses the same training set to find the purity of the attributes. The formula used to solve is

$$\text{Entropy} = 1 - (\text{Probability of each class})^2 = 0.7496$$

The Gain for Aesthetics, Ease of operation and Rich content is calculated and the values obtained are shown in the tabular column (Table 8).

Table 1: Training set for EASE OF OPERATION

ID	Websites	Frame	LinkH	MenuB
1	http://www.findtutorials.com	Yes	Yes	No
2	http://www.ehow.com	Yes	Yes	Yes
3	http://www.techtutorials.com	Yes	Yes	No
4	http://www.wannalearn.com	Yes	No	No
5	http://www.tizag.com	No	Yes	No
6	http://www.intelligentedu.com	Yes	No	No
7	http://www.cosmolearning.com	Yes	Yes	Yes
8	http://www.html.net	Yes	Yes	Yes
9	http://www.Learnitin5.com	Yes	Yes	Yes
10	http://www.thetutorial.com	No	Yes	No

Table 2: Metric Calculations

Website	Aesthetics			Ease of operation					Rich Subject			
	Image	Color	Emphasis	Aesthetics	Frame	LinkH	MenuB	Total EoP	About Info	Ser Engine	Auto Refs	Total
www.ehow.com												
RichSub	0.33	0.33	1	73	1	1	1	100	1	1	1	100

The value correspond to 1 denotes the impurity of the attributes whereas 0 denotes the purity. Thus the values obtained for the attributes taken does not reach the value 1 and hence the taken attribute is considered to be pure.

Calculations: The sample calculation for a website is shown below. The website www.ehow.com is taken as an example for carrying on the calculations. The training set used for the metric calculation is shown in Table 1.

The sample calculation for a website www.ehow.com is shown below.

Metric Evaluation: The metric value is calculated for each sub-characteristic (Aesthetics, Ease of operation and Rich Subject) and it is shown in the Table 2.

Bayes Calculation

Problem Definition: The problem which is taken up uses www.ehow.com for study. This site's quality has to be found, based on the attributes like aesthetics, ease of operation and rich content using classification theorems. The training set used for Classification theorem is tabulated in Table 3. The data for columns Aesthetic, Ease_operation and Rich_content were gathered from the semantic data of the web site as follows.

Metric Evaluation

Aesthetics:

- Image : Size = 0, Amount = 0, Alttag = 1

Then totally Image Metric = (Size + Amount + Alttag)/3

i.e., Image = (0 + 0 + 1) / 3 = 0.33

- Color: MultipleV = 0, SafeV = 0, LimitationV = 1

Then totally Color Metric = (MultipleV + SafeV + LimitationV)/3

i.e., Color = (0 + 0 + 1) / 3 = 0.33

- Emphasis = 1

Aesthetics = $0.4 \times \text{Image} + 0.4 \times \text{Color} + 0.2 \times \text{Emphasis}$

$$\begin{aligned}
 &= 0.4 \times 1 + 0.4 \times 0.33 + 0.2 \times 1 \\
 &= 0.73 \times 100 \\
 &= 73
 \end{aligned}$$

Ease of operation

- Frame = 1
- LinkH = 1
- MenuB = 1

$$\begin{aligned}
 \text{EoP} &= 0.2 \times \text{frame} + 0.4 \times \text{LinkH} + 0.4 \times \text{MenuB} \\
 &= 0.2 \times 1 + 0.4 \times 1 + 0.4 \times 1 \\
 &= 1 \times 100 \\
 &= 100
 \end{aligned}$$

Table 3: Training Set used in Classification Theorems

Aesthetic	Ease_operation	Rich_content	Class	Website_Name
100	60	80	Excellent	Google
60	100	50	Medium	Yahoo
73	100	100	Medium	sify
46	80	80	Good	sastra
73	60	80	Good	findtutorials
60	100	50	Medium	fashionandyou
47	100	100	Good	asos.com
60	100	80	Excellent	shopstyle.co.uk
33	80	80	Medium	bakingmad
127	100	80	Excellent	patient.co.uk
47	60	50	Medium	speedotv
47	100	100	Excellent	manofmany
73	80	70	Good	snapdeal.com
87	100	100	Excellent	tradus.com
33	100	100	Good	Yebhi
113	80	20	Good	buytheprice.com
80	30	20	Poor	indiaplaza.in
47	100	80	Good	Ehow
47	80	50	Medium	Tizag
47	40	100	Medium	wannalearn.com
60	100	100	Good	bl.uk.
46	60	100	Medium	oll.libertyfund.com
113	80	100	Excellent	lib.berkeley.edu
60	100	80	Good	tizag.beginner

Rich Subject

- About Info = 1
- SerEngine = 1
- AutoRefs = 1

RichSub = $0.2 \times \text{AboutInfo} + 0.5 \times \text{SerEngine} + 0.2 \times \text{AutoRefs}$

$$\begin{aligned}
 &= 0.3 \times 1 + 0.5 \times 1 + 0.2 \times 1 \\
 &= 1 \times 100 \\
 &= 100
 \end{aligned}$$

Methodology 1: Bayes Theorem: Bayes theorem is used to predict the quality of a given URL from the three Metrics obtained as a result of the proposed algorithm.

The formula used to solve is

$$P(Q/M) = P(M/Q) * P(Q) = \frac{P(M/Q) * P(Q)}{P(M)}$$

$(P(M/Q) * P(Q) + P(M/\sim Q) * P(\sim Q))$
 $P(Q)$ = Probability of the Quality Class
 $P(M)$ = Probability of the Metrics
 $P(Q/M)$ = Probability of the Quality Class for a given Metric

$P(M/Q)$ = Probability of the Metrics for a given Quality Class

$P(\sim Q)$ = 1- Probability of the Quality Class

$P(M/\sim Q)$ = 1- Probability of the Metrics for a given Quality Class

Proof: Here the terms used are:

$P(p)$ = Probability of the Poor class

$P(\sim p)$ = 1-Probability of the Poor class

$P(m)$ = Probability of the Medium class

$P(\sim m)$ = 1-Probability of the Medium class

$P(g)$ = Probability of the Good class

$P(\sim g)$ = 1-Probability of the Good class

$P(e)$ = Probability of the Excellent class

$P(\sim e)$ = 1-Probability of the Excellent class

For the given Training set the values are:

$$\begin{aligned}
 P(p) &= 0.2424, P(\sim p) = 0.7576, P(m) = 0.2424, P(\sim m) = \\
 &0.7576, P(g) = 0.2727, P(\sim g) = 0.7273, P(e) = 0.2424, P(\sim e) \\
 &= 0.7576
 \end{aligned}$$

Aesthetics: The Bayes result for Aesthetics is shown in Table 4.

Table 4: Aesthetics values

Aesthetics Mean = 60.4242

Quality	Poor	Medium	Good	Excellent
Probability of each Class under below mean	0.1299	0.1299	0.1232	0.0310
Probability of each Class under above mean	0.0310	0.0310	0.1232	0.2774

Table 5: Ease of operation Values

Quality	Poor	Medium	Good	Excellent
Probability of each Class under below mean	0.2990	0.1134	Ease Of Operation Mean = 66.3636	0.0240
Probability of each Class under above mean	0	0.0786	0.2142	0.1573

Table 6: Rich Subject Values

Rich Subject Mean = 63.6363

Quality	Poor	Medium	Good	Excellent
Probability of each Class under below mean	0.3386	0.1245	0.0303	0
Probability of each Class under above mean	0	0.0740	0.2000	0.1758

Ease of Operation: The Bayes result for Ease of operation is shown in Table 5.

Rich Content: The Bayes result for Rich Subject is given in Table 6

Final Step of Bayes Calculation is grouping of respective Classes of all the attributes. Hence the Final Quality Values are

Poor Value =0, Medium Value =0.0001, Good Value =0.0052, Excellent Value =0.0076.

The Quality which is the greatest is considered as the Quality of the website. Thus the Quality of **EHOW.COM** is **Excellent Quality**

Methodology 2: Tree Induction Method: The Tree Induction method is also used to predict the quality of a website for the given URL. The formula used to resolve is as follows:

$$\text{The overall Entropy} = -\sum P_i \log P_i = -1.9976$$

The tree induction for Aesthetics, EaseofOperation and RichSubject is calculated and the values are tabulated in Table 7.

C_1 – Class that falls in Below Mean Category, C_2 – Class that falls in Above Mean Category

Aesthetics Mean = 60.4242, Ease Of Operation Mean = 66.3636, Rich Subject Mean = 63.6366 **Comparison between Bayes and Tree induction**

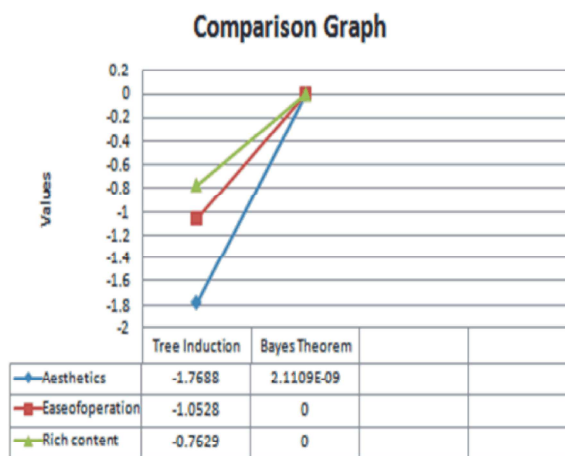


Fig. 3: Overall table comparison for Bayes and Tree induction **Gini Index**

From the gain values obtained from both the methodologies it has been noted that the Bayes Theorem has more gain than Tree induction method. Hence the quality obtained using Bayes theorem is said to be accurate. The Comparison Chart for the gain obtained from Bayes Theorem and Tree induction is shown in Fig 3.

The Gini index also uses the same training set to find the purity level of the attributes. The formula used to solve is

$$\text{Entropy} = 1 - (\text{Probability of each class})^2 = 0.7496$$

The Gain for Aesthetics, Ease of operation and Rich content is calculated and the values obtained are shown in the tabular column (Table 8).

Table 8: Values calculated using Gini Index

	Aesthetics	Ease of operation	Rich subject
Info value (R)	1.3610	1.2334	1.1860
Gain	-0.6114	-0.4838	-0.4364

Table 9: Comparative Analysis Table

Websites	Aesthetics	Ease of Operation	RichSubject	Class
Staffincometax. appspot.com	60	0	0	Poor
Siddham.webs. Com	60	80	50	Medium
Tradus.com	47	100	100	Good
Ehow.com	80	100	100	Excellent

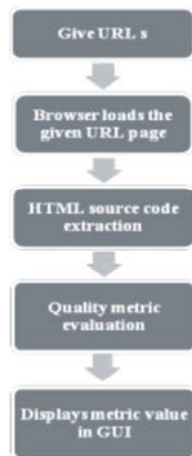


Fig. 4: Architecture of Quality Metric Evaluation

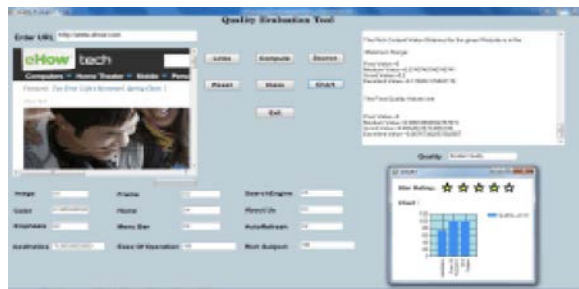


Fig. 5: Ehow.com home page

The value correspond to 1 denotes the impurity of the attributes whereas 0 denotes the purity. Thus the values obtained for the attributes taken do not reach the value 1 and hence the taken attribute is considered to be pure.

Implementation Results

Quality Evaluation Tool: In this tool for a given URL, users have the facility to view all the Links and HTML Source code of that page. User has the flexibility to view all the analysed quality result with a chart depicting the range of the score. This tool has been developed with the complete rules and guidance as provided in UWE [40].

The HTML source code of a given web site is analysed and only the needed parts are extracted for quality metric evaluation. Based on the algorithm proposed each metrics are calculated and the results are passed for predicting the quality by Bayes theorem. The flow of the action is shown in the Fig. 4.

Snap shot of the tool with an example is shown in the Fig. 5.

The comparative analysis for four different websites have been made in the form of a table (Table 9) and generated a chart (Fig.6) and a graph (Fig.7) to support this.

Individual Chart Representation for Aesthetics, Ease Of Operation and Rich Subject

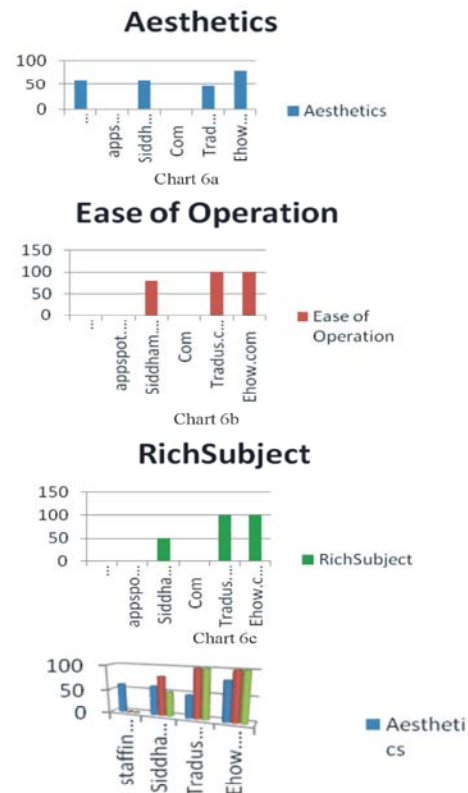


Fig. 6: Chart for the comparative analysis

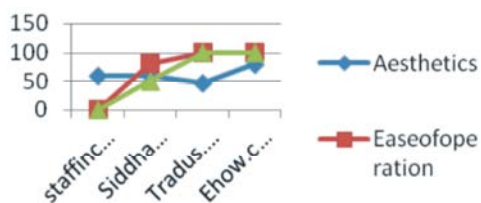


Fig.7: Graph for Comparative analysis

RESULTS AND DISCUSSIONS

The study which has been explained above is incorporated and the result for predicting the Usability characteristic of the given website has been achieved. This implementation is explained as

The URL of the website has to be entered in Enter URL textbox and any of the below button is clicked for processing.

- Links button - All the links in that page is displayed. This will help the user to know about all the links in that webpage.
- Compute button - The metric calculation is performed by extracting the source code of the given website and the results are displayed in their respective textboxes. This will be useful for the user to perform or verify the Bayes calculation.
- Source button - The source code of that page is displayed. This will helps the user to cross check whether the metric calculation made by the Compute button.
- Class button - The Values obtained by the Compute operation is passed for the Bayes calculation and the quality is displayed in the Quality textbox. For the better understanding of the Bayes theorem the calculation is displayed in a separate textbox.
- Chart button - This button displays the Chart and star rating for the metric value obtained. This will help the user in better understanding of the quality level of the websites.

CONCLUSION

Thus based on the study in the web Engineering domain for Quality Evaluation, finally a Quality Evaluation tool is developed which will automatically analyse the source code of the web page and evaluate the web site's Quality and further a final result is provided by the Bayes calculation with a chart describing the range of the Quality characteristics.

Future Work: In this project the metrics analyzed fall under one quality characteristic. It is possible to evaluate the same for many more metrics and also other quality characteristics. HTML code is parsed to find the metric values since most of the websites are in HTML. The procedure and code can be changed to assess the metrics in different language.

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