Web Browser: A Client side application used to access the Internet.

Web Server: Server contains the web pages that are requested from web server.

Log Files. Log files keep the records about the various types of access done by a user on Internet.

User Session: User Session is activity by a user with Unique IP address during a specified period of time.

Rule: A measurement of usability of content accessed by a web Site

Interest Rule: This specifies the accurate and necessary non-standard content to be accessed from the mining process.

6.2 Various Issues with Traditional Usage Mining With Centralized Servers:

Scalability: Traditional systems where confined to their basic architecture. There were not slots to expand the systems.

Reliability: These systems cannot hold the pressure of exponential growth and were not to fault tolerant.

Slow: Due to congestion the systems were responding slowly to the user requests.

Inferior Streaming Quality: For heterogeneous data like animations, videos the system was not able to make it real time due
to inferior Streaming.

Caching: On the server, data is stored in cache hierarchy. There is possibility of mismatching of data in the local cache access patterns and Web server log records [37]. E.g. user has visited page hierarchy but due to data in caching server has recorded log differently as second time access of each page would directly been from cache. So the second entry of page is missed from log [37]. So, it cannot be predicted that log that every time correct data. Therefore, caching is a big issue for accessing Web data. Atul &Anil [44] proposed portable extended cache memory to reduce Web traffic and to improve performance. But, the basic problem with this technique is security due to cache memory is applied at the client end.

CGI Data: Common Gateway Interface (CGI) is used to pass variables and user entered data to respective server. It has a functionality to hide the value and username pairs from URI. That makes it difficult to check the User in Web Usage Data.

Session Identification: Finding and Tracking the session usage duration and creation especially when parallel login with same account through different machines makes identification complex.

Dynamicity of Pages: The content of dynamic pages is changed continuously for a same user with a fixed interval. So, minor change in content makes vary the log data as result.

Transaction uniqueness: Identifying unique users is an issue and their unique transactions as same account multiplicity is available.

7.Proposed Work

Neural Networks generates internal changes to adapt behavior in response to the environment. The success of E-learning systems mostly depend on whether these systems can provide an adaptive system with an adaptive interface to the learners depending upon factors like their professional background, learning abilities, learning goals etc. These features can be incorporated only if e-learning systems will be able to classify the learners. Neural networks can be effectively used for classification.

E-Learning presented statistic data regarding the assessment activity for each student during that period of an online course. Data must be divided in separate databases for training and testing of the classifying indicators. The three types of databases used are *main database, Training database and testing database.* The way in which the database is divided is important, as it represents an improvement criterion for the classifying indicator. With training of the classifying indicator shows that bigger the data better will be classifying results.

7.1 Properties of Proposed Framework.

Reliability: The Reliability in increased the proposed system with respect to load and growth

Self-scaling computational units: The attention subsystem is based on competitive learning enhancing pattern features but suppressing noise.

Speed: Speed of System is increased because of capability to handle efficiently and learn new patterns by ART.

Self-adjusting memory search: The system can search memory in parallel, and adaptively change its search order.

Quality: Quality of streaming will be increased to maximum limits.

The parameter that needs to be selected for architecture improvement is the number of neurons of the layer hidden between the input layer and the output. Fig (7) shows the how neural network can be incorporated in traditional Web mining flow. The results in [41] show that if the neural networks will be implemented in collecting the real content, the response time and efficiency of Web can be increased drastically

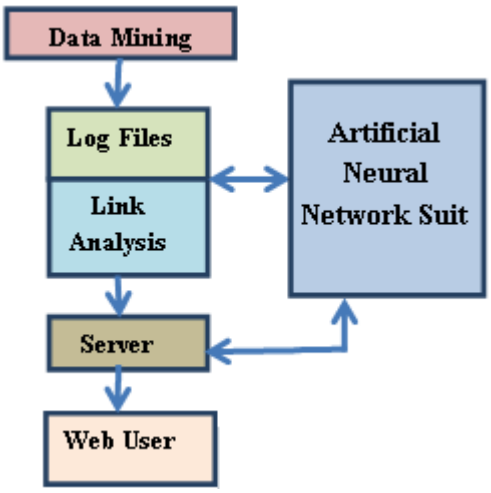

Figure 7: High Level view of proposed system

Also by using the neural networks there will be the best configuration from the error point of view. And there will be improvement of the performances along with the growing database by retraining, thus including the new information collected from the subsequent wards.

With this approach, the working of traditional architectures will become dynamic and efficient. The main objective is to provide an optimal solution at acceptable cost by looking for an approximate solution to problems. The soft computing methodologies (involving neural networks, fuzzy sets, rough sets and genetic algorithms) hold promise in Web mining. ART is a family of different neural architectures where, the most basic architecture is ART1 by Carpenter and Grossberg, in[43].

ART1 can recognize and learn binary patterns. ART2 class of architectures categorizes arbitrary sequences of analog input patterns [43]. The below give architecture in (Fig 8) explains the internal course of work of ART systems with traditional e-learning systems.

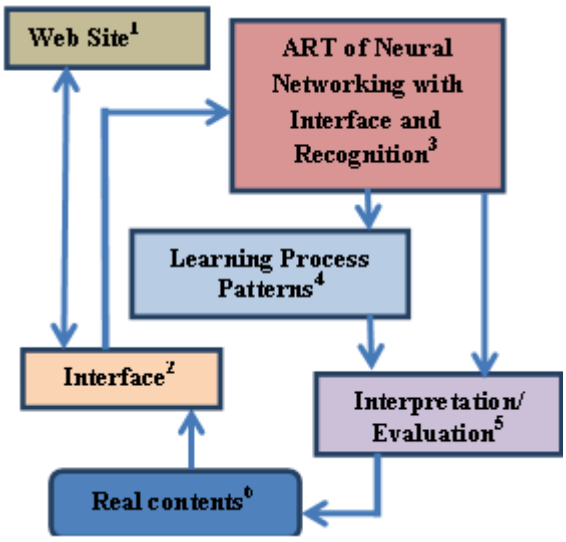

Figure 8: Adaptive E-Learning Architecture

ART is used in modeling such as invariant visual pattern recognition where biological equivalence is discussed in 1990. An ART system consists of two subsystems, an attention-subsystem, and an orienting subsystem. These systems in co-ordination make systems adaptive to various types of input parameters depending upon their frequency of occurrence.

The proposed approach includes Web-log analysis via introducing ART structure concept of neural networking for widely distributed, huge, highly heterogeneous, interconnected, semi structured, evolving, hypertext information repository of World Wide Web. The architecture with ART models can self-organize in real time producing stable recognition while getting input patterns beyond those originally stored. The series of steps followed in the above frameworks are:

1) The front end learner is prime source of queries for accessing Web application.
2) The Interface provides the access to the data base.
3) The data from the general KDD process is fetched to the user.
4) In addition to fetching data to the general user a copy of user links is sent to the ART system.
5) First a hidden layer which is composed of a group of neurons equal to the biggest layer of the network and the performances of the classifying indicators will be assessed.
6) Gradually a neuron is added to the hidden layer and the performances of the classifying indicators are re-assessed.
7) Optimum number of neurons of the hidden layer is achieved when the error rate is minimum or has no significant fluctuations.
8) Here is now the ANN can be used where in [35] there is minimum calculated error rate and overall performance.
9) The patterns are learned in phase 4 for future use
10) The learned Web Usage pattern is then open to access through interface. Same pattern can be evaluated for further saving on KDD architecture
11) Next time if the same information is accesses again, there will be a response time by systems as it is previously adapted to the system.

The stabilization of learning and activation occurs in the attention-subsystem by matching bottom-up input activation and top-down expectation. The orienting subsystem works like a novelty detector. It controls the attention subsystem when a mismatch occurs in the attention-subsystem. By using Adaptive Resonance Theory (ART), the results achieved can be comparatively best, more specially and specifically its feature of dynamic vigilance parameter and top down expectation and bottom up input action approach. The classification will be easy for huge amount of Web logs using ART model. The classification and clustering of any type of complex log data on the basis of specific analysis such as session tracking and pattern identification can be done my ART model.

In the above given architecture the Web log files that are accessed frequently are used by the proposed architecture for learning processes. The architecture adapts the process that is used by different users in accessing heterogeneous data. In a recursive manner the system adapts itself to perceive the users ways of accessing the links on the World Wide Web.

In addition to responding to the Web user, the same information is adapted in the network. This will help in caching the same page when that will be accessed or fetched by the multiple users next time. Already learned patterns directly access their corresponding category. Using the environment as a teacher the system can adaptively ovulate intentional vigilance. Disapproval of the current recognition in the environment of the system, changes this parameter to be more vigilant.

8. Conclusions

The advances in neural networking have created drastic change in making the software systems capable of learning and prediction of future trends. In the era the researchers are getting better performance using neural networks. In this research script we applied neural network at Web mining log phase at the server end. So using neural network in Web Mining architecture of e-learning systems will enhance the performance of mining data on Web and by using adaption concept of neural networks, the e-learning systems can be more dynamic by allowing personalization of the e-learning environment to suit the needs of the learner.

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