RESEARCH ARTICLE
SMART LEARNING ENVIRONMENT BASED ON SEMANTIC WEB WITH DISTRIBUTED SYSTEM BASED NETWORK
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ABSTRACT
The primary aim of this work is to open a novel research & application perspective on reliable distributed systems in human welfare engineering (HWE). The underlying hypothesis is that dynamic models of distributed systems can be established by the use of distributed database system using database sampling techniques being applied to data gathered in observing the distributed systems network and deployment of such systems in rural areas. Distributed system will help us to decentralize the entire system into modularized independent system and also due to rapid advancement of digital technologies the classical aspects of computer science exported into absolutely new platform. In our research work we worked on rural areas for collecting the social data and educational data to procure and applying our proposed model architecture into rural areas for upliftment of human development index (HDI) in every corner of human life. The proposed architecture enabled us to communicate a distributed framework in extremely poorer rural belt. The main objective is to bring social network into advance digital distributed system within distributed database network. We present the general approach and elaborate a concrete scenario of applying this approach in the field of distributed systems. Our results explain us and answer some key finding in computer science.

INTRODUCTION
Modern advancement in information communication technologies (ICT) and high-speed digital backbone in networking, the e-smart learning environment can offer a new paradigm of learning to learners from urban to rural areas. Traditionally e-smart learning offers teaching and learning by wired computers and in a lecture-style classroom setup only. Even though learners were able to browse and download information anytime and anywhere through the existing e-learning platform, they were limited to wired classroom setups.

Smart learning is an important and novel paradigm of learning today. The concept of e-smart learning plays key role in the creation of an efficient learning environment that offers personalized contents and easy adaptation to current education model. At present, the scenario is completely change it’s not because of classical learning environments due to constantly development in technologies. It also provides learners with a convenient communication environment and rich resources. However, the existing-learning infrastructure is still not complete in INDIA due to heterogeneous geographical typography and different ethnic conditions [1, 2].

But considering the fact that, the region which poorly established in all aspect of human development cannot get small things easily [3]. This region only based on analog type of development where one can buy books and read and unable. Educations plays a vital role in human development and definitely are backbone of any developing society or emerging empowerment in any population which deserve to survive with human values.

to buy laptop to get better education. Students have to buy bulk book and read but it is not possible to carry whole book while travelling one place to other or moving one to other place. In such cases technology based learning or device induced learning (DIL) or digital based learning (DBL) will help to improve learning ability in any situation. Off course advancement in modern digital cutting technologies especially in information communication technology (ICT) set a new parameter for smart based learning environment to get better learning and thinking ability (TA) [4]. Rapid development of communication technologies around the whole world creates a massive opportunity in education and its dependent services. Smart based learning still in nascent stage or in early stages of evolution. But around the world especially in USA faculty and students are realizing the potential of smart based learning [5]. Smart based learning driven by students and faculty which has high impact to develop new skills to tackle upcoming challenges in 21st century [6].

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Distributed system no longer can be assured by static design because of increasingly large, heterogeneous and dynamic. On the one side, large-scale computing grids, clouds and clusters provide computing and data resources with hundreds or even up to thousands of nodes. On the other side, the development of small, embedded potentially mobile devices with wireless communication facilities allows for the creation of wireless networks with hundreds of nodes to set up learning environment in rural areas [7].

LITERATURE REVIEW

Shiva Kanaujia et al. [8], discussed about smart based learning and concept in Indian aspect. New challenges of smart based Learning for the students and instructors are described by Kaur et al. [9]. Paper summarized that in online or distance Learning course, smart based Learning presents a host of new support requirements, and institutions must provide the appropriate resources to address them. Alyne Rothberg et al. [10] has suggested organizational strategies for accessing Learning opportunities with having the availability of the broadband connection. NilayM.Yajnik [11] had discussed about the Next Generation Internet. T. Rama Devi et al.[12] presented initiation of National Institute of Rural Development (NIRD) using ICT tools for the training of persons involved in rural development programs of central and state governments. DeepshikhaAggarwal et al.[13], suggested that use of smart based Learning in vocational and informal training is very effective in a developing country like India where majority of population is illiterate and residing in rural areas.

If we look tarai region we found that lack of university infrastructure is not available by this people of this region can only access information only from smart based devices. Cyberspace which is a very cheap solution and moreover will raise the level of education, literacy and economic development. Rural development in every corner of development involves some typical process of expanding the opportunities of people who dwell in remote or isolated locations to live a healthy and happy life and accounts for the level of achieved well-being. Rural development aims at lifting rural communities out of poverty and creates sustain environments in every corner of human life. It leads to the improvement in the quality of life of a people. With development comes the ease in everyday way of life, improvement in health quality, increase in life expectancy, etc. as found in today’s developed nations. On the other hand, many areas that lack the privileges associated with development today are fraught with high infant mortality, low life expectancy, poor sanitary conditions and epidemic of diseases. Development requires a boost in the energy consumption of the community. Energy services such as electricity, fuel for cooking and mechanical power in agriculture all ensure improved health and increased productivity. Though development itself is a process of progress, in the context of rural development, it is used to focus on ends rather than the means to achieve it [14].

PROPOSED METHODOLOGY

Considering the fact & figure and also communication with networking technologies in rural areas especially in INDIA are relatively weak due to straight biasness from urban to rural areas. In this work we are closely related to application of Computer Science in Social engineering and also in this novel work we are establishing and developing new paradigm in e-smart based learning in extremely rural areas of Uttar Pradesh so called Maharaiganj. The region behind is due poorer situation in all sectors of Human development Index (HDI). In this work we only consider establishment of e-smart based learning systems with the help of classical & modern heterogeneous distributed systems network. In this complex task we sampled complex educational data before deployment of our proposed system and also after learning activity by using our proposed system.

The proposed model is based on decentralized distributed system network by complex phasic compartmental model. In our model every area related to single node and supervised by standalone system which is centralized in concern rural area. In this study we worked on rural areas for collecting the social data and educational data to procure and applying our proposed model architecture into rural areas for upliftment of human development index (HDI) in every corner of human life. The proposed architecture enabled us to communicate a distributed framework in extremely poorer rural belt.

The proposed system is based on supervised classification model to sampled raw data before and after to check educational growth using proposed system. The result is analyzed in terms of satisfaction from smart based learning, current use of material and expectation from the digital based learning. For our study purpose we choose eastern tarai region of Uttar Pradesh and its one of remotely district Maharaiganj. We choose around 800 students from different institutions based in this regions and also population data and demographic data around 400 hundred with rural data of different tehsils and we took data from our students from one of engineering institute situated in this region along with data from different locations of this district, they came from different regions of this place. Data are sampled from different towns of this district like Maharaiganj urban/rural, Nautanwa, Nichlaur, Siswa, Ghugali&Pharennda. The distributed data processing is done by using complex linear convex processing (CLCP). The main focus of this study is to consider the fact which belongs to this region typically backwardness. The ultimate focus is on to develop robust system for learning using smart devices.

Our proposed distributed model is machine-understandable data on the Web and it will become a high priority for many communities. For this we introduce Semantic Web effort to improve the current data by making Web resources machine-understandable because current Web resources do not reflect machine-understandable semantics. Web induced Semantic Web provides a common framework that allows raw data to be shared and reused across applications, enterprises, and community boundaries. It is based on the Resource Description Framework (RDF) [15], which integrates a variety of applications using XML as syntax and URIs for naming. Using semantic based distributed model we are enhancing and delivering our system in a very lucid manner. Overall efficiency and performance are rapidly increased after deployment of proposed system. In our model, a data based supervised Semantic Grid (SSG) for E-learning based on supervised dartgrid is introduced [16], and it provides a semantically distributed infrastructure & heterogeneous
supervised datagrid to classify this for E-learning scenarios are aforementioned.

Proposed Working Functionality

Fundamentally basic service layers, three services are implemented & proposed.

E-smart based learning Database Access Service

It supports all the typical remote operations & functions based on educational resource contents, such as course documents, videos, test-bases, courseware, and teacher information as well as web ontology based services etc. This operations also includes querying an education resources, insertion an education resources, deletion an education resources, and modification an education resources.

E-smart based learning Database Information Service (DIS)

Inquiring about Meta information of the educational data resources such as DBMS descriptions, privilege information, statistics information that includes CPU utilization, available storage space, active session number etc.

E-smart based learning Access Control Service (ACS)

This service is developed for access control in E-learning Semantic Grid. For example, it provides the service of authorizing or authenticating heterogeneous group of users to access courseware resource. Since our proposed model entirely controlled by modular basis, every connected nodes are controlled by nearest resource manager (RM).

The proposed model is based on SOA (Service Oriented Architecture) and also with MOAP™ (Multi object architecture protocol). The characteristics of our model are entirely dependent on properties of distributed protocol. Overall scalability & consistency with data encapsulation are tightly maintained.

Applicability

E-Smart based learning is basic entities for participants to get part in the study. The learners are divided into groups to provide information on their socio-economic characteristics which made it possible to compare them as well as portray the structure of each sample. The results obtained from groups are compared in terms of gender, age and education. However we observe that after deployment of our proposed system people of this region are technically sound and also they perform better. Nevertheless we observe that living standard is also growing increasingly.

The distributed system grid will play a very broad & important role for the wide acceptance of creating e-smart based learning environment. It will provide enhanced and web support for end users to access heterogeneous based services and resources by understanding their domain problems and providing solutions. We present a distributed system based supervised Semantic Grid (SSG) for E-learning based on semi-supervised distributed darctgrid, and also put forward a dynamic, extensible Semantic-based distributed infrastructure for E-smart based learning scenarios. We also enable & explore the essential and fundamental roles played by RDF semantics for e-learning resource sharing, and implement a set of semantically enabled tools and distributed grid services for E-smart based learning service.

Future Scope

Smart devices based learning is highly emerging knowledge tool now days. It has wide scope in developed as well as in developing countries. The areas which are undeveloped and not so educated get attraction of digital based Learning. Smart-Learning provides a method of delivering knowledgeable contents through different electronic secondary media storage tools. The main constraint identified in this process is availability of proper bandwidth, willingness of smart based learners and some learning habit to deliver the material to learners. Overall, 70% participants found smart based learning is beneficial to rural areas for knowledge, better job opportunities, and promotions and to learn new developing technologies in the market.

Especially focusing towards rural areas it helps in developing people’s social and mental ability

There are more works need to be done in this area. One can extend this work into distributed based web Semantic Grid for E-learning. The proposed system needs to be further tested with more data & also scalability needs to be tightly checked. More features are needed for the distributed education resource management (DERM). In the meantime, coupling of different databases and platform indecency need to be maintaining when enabled with distributed platform. Now we have a working prototype of an open e-smart based learning education resource based entirely distributed system. The next step is to make it more powerful by fine-tuning its operability. As far as education is concerned, it is important to manage all education resources via the distributed grid based system for E-learning.

References

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