Scientific Journal of Impact Factor(SJIF): e-ISSN(O): 2348-4470

International Journal of Advance Engineering and Research Development

Special Issue for ICPCDECT 2016,Volume 3 Issue 1

IoT Based: Knowledge Acquisition and Friendship Selection in Smart Campus

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Abstract:*In the latter days, cloud computing, mobile computing and Internet of Things have attracted the eye of the researcher's reception and abroad, the appliance of them square measure progressively wider and deeper. In observe ancient data center is born-again into A cloud computing supported several advances technology like RFID devices and Mobile web. The software systems were operating separated before in campus, campus create them currently work along as an entire, and campus offer smarter support for campus management and teaching. We will 1st target the appliance of the Internet of things and also the cloud computing in education. Then we tend to discuss this circumstances of campus and indicate the excellence between current campus and sensible campus. By establishing the model and also the application framework of sensible campus hoping on Internet of Things. In that we tend to primarily target combining digital library and manual library that decrease the efforts of humans and makes simple to handle it, the second factor is to extend the communication between the individuals in campus i.e. primarily students and employees, that facilitate to accumulate the information the maximum amount as doable and a minimum of we tend to examine every and each student in campus and supply them pointers to extend the performance.*

Keywords: *IoT, Cloud Computing, Data mining, SIoT, Encryption, Parallel Computing, RFID Tag.*

I. Introduction

Web services ar meant for realizing, storing, process and disperse information from environmental resources. Context aware cares with reasoning associated adapting the environmental context on the server facet and providing services to the clients in an economical approach.

The situation aware environment paved the approach for web services to supply changed services to students looking expertise. The most objective of this technique is to supply the simplest knowledgeable environment that prefers the system to adapt its behavior primarily based upon the context.

The user gets the services according to their state of affairs, location and environment that ar spoken as Context aware service. The most role of the context aware system results in acquire, method and reason the context, then adapt the applying service in line with the user's request. The most objective of this technique is to supply the simplest knowledgeable environment that prefers the system to adapt its behavior primarily based upon the context.

1.1. Library management: In these modern days everything is getting automated. Automation reduces manual work and effort which in turn saves lot of time and energy. In conventional library system the records of books issued, books returned etc. are maintained manually in registers. This is very mundane and takes lot of time to process. This project avoids such mundane tasks with automation principally within the library, students search the books, journal papers, magazines with bibliotheca knowledge; it loads longer to go looking a book. we are able to have the new management model inside the library by combining ancient and digital by IOT. The advancements in internet services and mobile services have incorporated the good library management system that permits the scholars to go looking, browse, and question book details via good phone once they enter into the library while not the other's data. For retrieval of expected book details in library at anytime and anyplace within the library employing a hand-held device through net is finished these tags combine the transportable, identity card and different physical objects. User can get the desired service and resources at anywhere through internet technology. The new model can notice the communication between user and library, user and resource.

1.2. Teaching management: In the campus, we have a tendency to does not needed to rearrange someone specialist to hold on the checking group action statistics, analysis reports and therefore the management. Students will sign up exploitation card and mobile/web browser that have the RFID label/QR code/ID, the knowledge of the scholars square measure additional to the information, the staff, student and fogeys will master the time period info and

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performance of scholars from the our information system. The RFID technology is employed within the library and group action system. We will extract the performance result by remotely by work into the system from anyplace.

1.3. Real-Time management: We can have the new management model within the campus by providing the time period notification within the completely different geological area of the campus as per needs.

1.4. Attendance-monitoring management: An attendance-monitoring system serves to offer us a time log that's originated as a processed information victimization cloud technology. Associate attendance observance system maintains a daily, weekly, monthly record of a person's arrival and point from work or campus. The attendance monitoring system information is associate application that contains log files a couple of person's history. This system contains a person's personal info and attendance history.

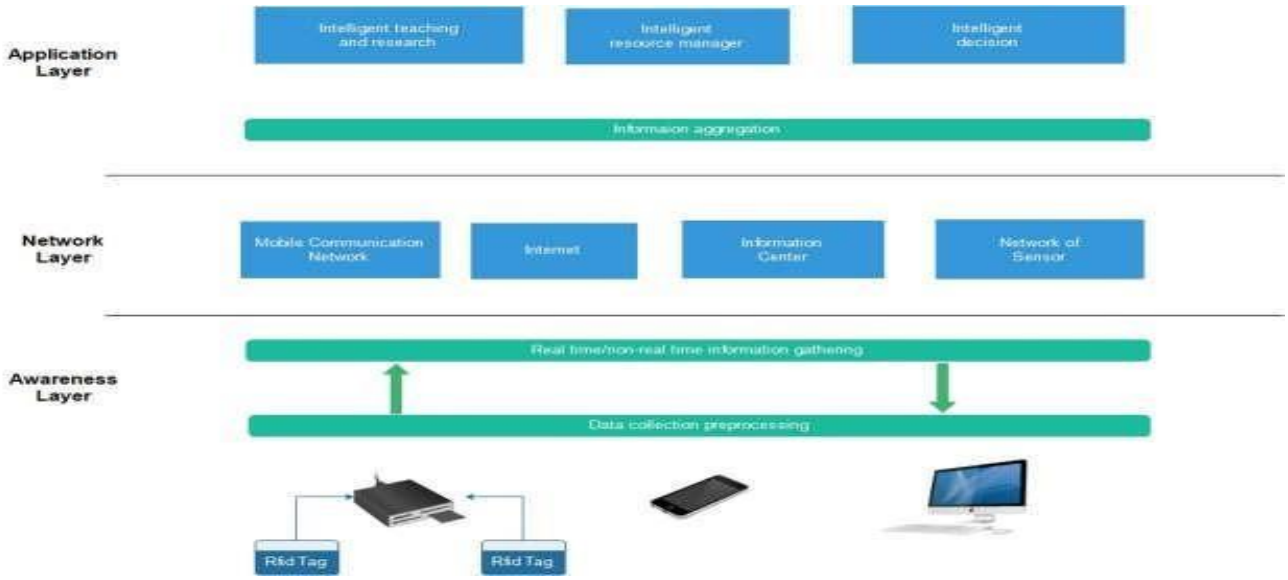

Figure 1. The system framework under the environment of IOT

Figure 2. Diagrammatic illustration of cloud Education and Management concept.

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1.5. Forum: Forums save info denote on a specific topic by the individuals to ascertain at anytime, anywhere, this creates a discussion surroundings between users. Everything that gets denote by the user's gets read again and again. the actual fact that the discussion is not real time means it seldom turns into heated arguments as user are given time to analysis and contemplate their comments before replying, this makes for principally high-quality discussion.

Forums permit you to form strong on-line communities between users even with low traffic volumes since individuals typically come to the positioning on a daily basis to catch informed what's happened since. After the initial time concerned begin—to start out—to begin it up and therefore the time it takes to urge individuals to speak you will start to ascertain the advantages that your forum is transfer and therefore the time required to keep up it'll appear less and fewer anytime you see your traffic intensifying.

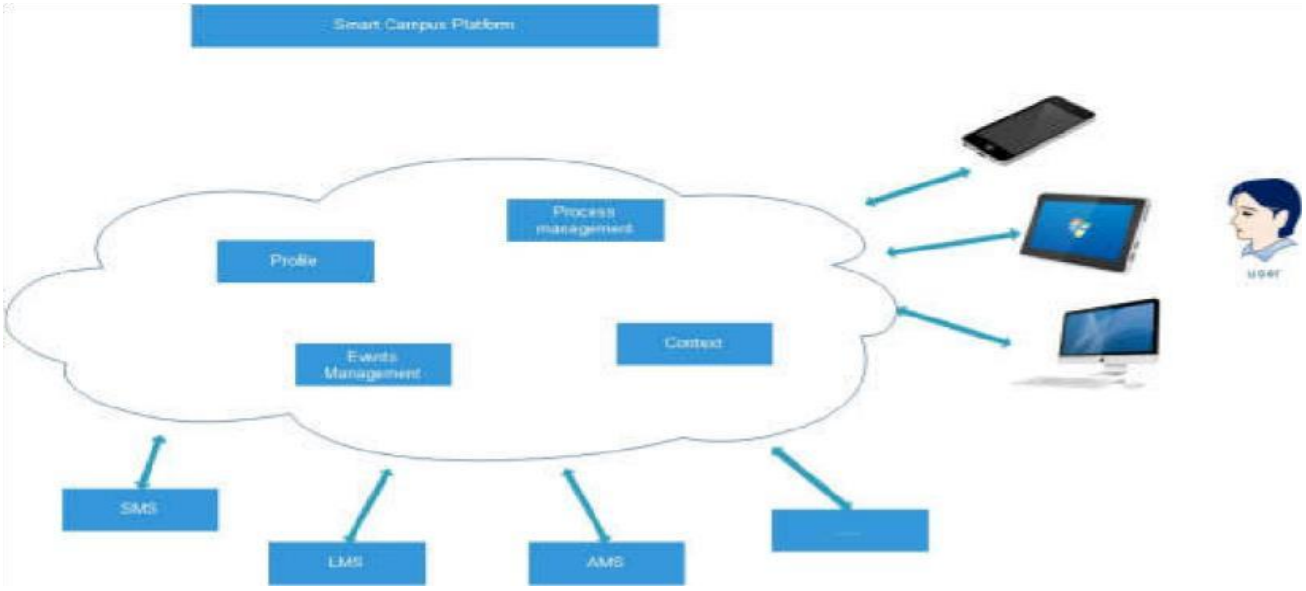

Figure 3. The Campus platform

II. Motivation

The internet of things in education is that the import a part of the new info technology, and it connects everything through RFID, sensor, QR code and time period positioning technology and realizes the intelligent identification, location and management for merchandise. IOT of education totally perceives the staff, resources and instrumentation of campus in sensory activity layer. Then network layer is answerable for the reliable transmission of data from sensory activity layer. Education cloud system platform Education cloud is associate degree system applied to education base on the cloud computing. It integrates cloud computing and code platform through deploying the education cloud the campus realizes the conversion from ancient information center to server virtualization, teaching management, and communications services. Campus has veteran 3 phases: ancient campus, e-campus and digital campus. Campus is that the higher stage of education system, and also the evolution of campus relies on the development and development of digital campus. Campus emphasizes On-demand, react quickly. In fact, sensible campus reflects a lot of options regarding intelligence

III. Literature Survey

Friendbook, a completely unique semantic-based friend recommendation system for social networks, which recommends friends to users supported their life designs rather than social graphs. By taking advantage of sensor-rich smartphones, Friendbook discovers life forms of users from user-centric sensing element knowledge, measures the similarity of life designs between users, and recommends friends to users if their life designs have high similarity. It tend to model a user's lifestyle as life documents, from that his/her life designs area unit extracted by exploitation the Latent Dirichlet Allocation algorithmic program. It tend to any propose a similarity metric to live the similarity of life designs between users, and calculate users' impact in terms of life designs with a friend matching graph. Upon receiving letter of invitation, Friendbook returns an inventory of individuals with highest recommendation scores to the question user. Finally, Friendbook integrates a feedback mechanism to any improve the advice accuracy. [1]

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Multi-keyword stratified search over the storage knowledge. Specifically, by considering the big variety of outsourced documents (data) within the cloud to utilize the connection score associated k-nearest neighbor techniques to develop an efficient multi-keyword search theme which will come back the stratified search results supported the accuracy. It leverage associate economical index to improve the search efficiency, and adopt the blind storage system to hide access pattern of the search user. [2] To deals with multi-keywords searches and is meant to hurry up the search time by taking advantage of High Performance Computing, that is wide utilized in Cloud Computing [3]

A secure and economical authentication and authorization design for IoT-based health care is developed. Security and privacy of patient's medical information area unit crucial for the acceptance and omnipresent use of IoT in health care. Secure authentication and authorization of a far off health care skilled is that the main focus of this work. The planned authentication and authorization design is tested by developing a example IoT-based health care system. The example is made of a Pandaboard, a TI SmartRF06 board and WiSMotes. [4]

Table 1. The contrast between the Digital Campus and the Smart Campus

	Digital Campus	Smart Campus
Technical environment	Local area network Internet	IOT, Cloud computing wireless network, RFID
Application	Digital teaching resources Digital library Admin of networks	sensory ability, interoperability, control capabilities
Management systems	Isolated system	System sharing, Intelligent
Real time notification	NIL	sensing the context of user

IV. System Architecture

Figure 2 is the introduction of cloud computing in education, for delivering contents, services and applications for learning purposes, which mainly focuses on access of system from any-where at any time using computing devices which have internet connection. It supports the students and faculty in their task of acquiring knowledge. This includes providing means in the preparation and delivery of contents, with forums it focuses on social networking within the campus, hence enabling social interactions between people.

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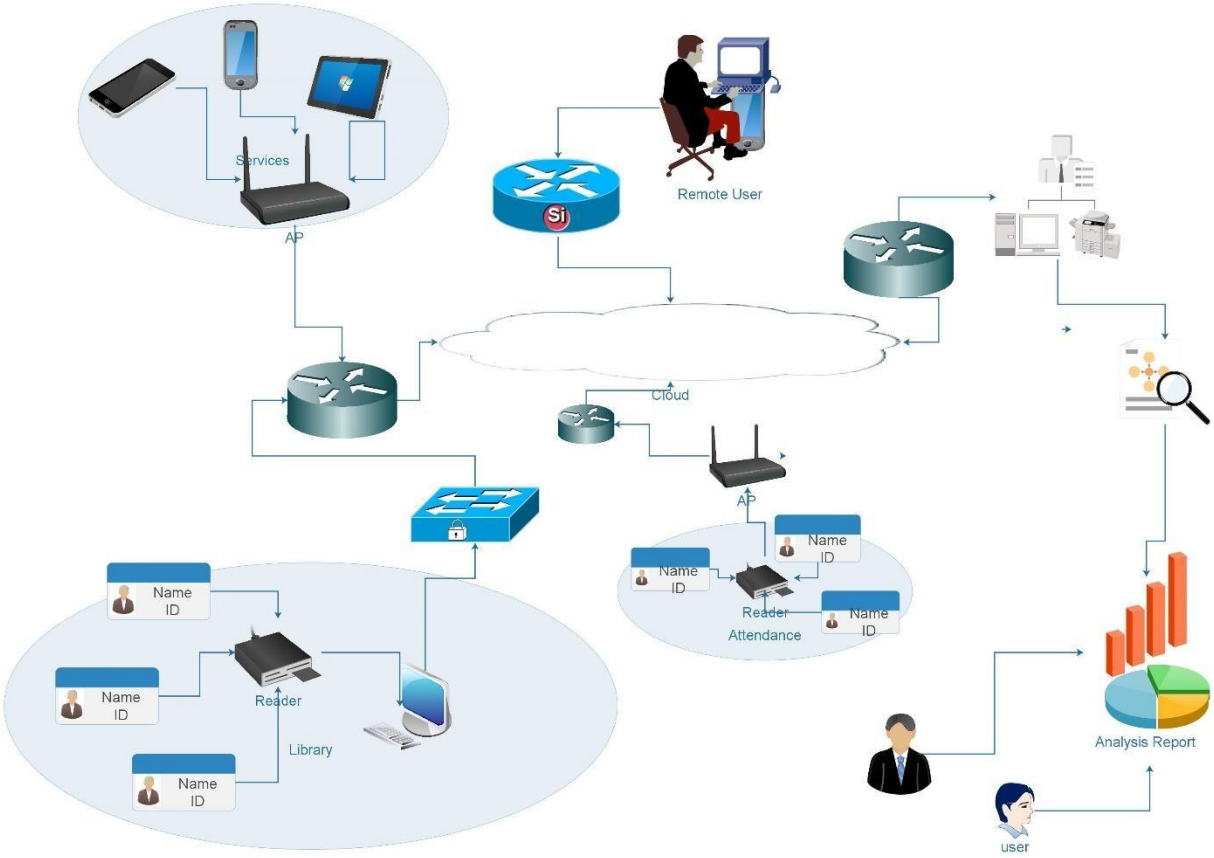

Figure 4: System Architecture

Figure 3 shows the detail description of campus
For example, localization information (from router monitoring software) can be used to find out the location of students to automatically send personalized reminders, or appropriate notice. Attendance can automatically be logged when a student enters a classroom, and students can join remotely using any available device (such as mobile phones or desktop computers). These are just some of the scenarios that can be easily implemented campus environment. Figure 5 shows the abstract architecture of campus.

1. User logins to system with device such as smart phones, laptop, PC etc.
2. User monitors his/her status on device.
3. User performs controlling operation on device.
4. User can communicate and gain knowledge.
5. System observes the context of user in campus.
6. System provides the services to user such as generation of various kinds of reports, schedule notification.

V. Mathematical Terms

For encryption: data = (data+key) mod 26
Fordecryption: data = (data-key) mod 26
AES: data = key XOR data
For formation of friend circle:
for similarity use,
S(i,j) = Sc(i,j)
Sc(i,j) = similarity of user's like = cos(li,lj)
Using this similarity we draw sim matrix then minimum distanceformed circle of friends.

For Searching: we use multikeyword based searching, parallelsearching

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TF-IDF method for searching:
TF =0 if frequent(dt)=0
TF =1+log(1+frequent(dt)) otherwise
IDF(d) = log 1+|d|/|dt|

VI. Issues

Constructing sensible campus supported the IOT associated cloud computing technology is an inevitable trend. However there are several problems ought to be excellent. One amongst the queries is that the top- level style isn't excellent. The designer ignores to dig deeply the worth of knowledge resources, so the resources are tough to be shared. Moreover, the answer of education cloud isn't excellent, and faculties attach additional importance to workplace management than teaching and analysis. Anyway sensible campus is that the higher stage. We must always pay additional attention on style during this stage. The opposite drawback is that the information customary. At present, there are several manufactures of RFID label and sensor, the standards are varied and not compatible caused by this development. Cloud computing technology is tough to urge a whole unified management and effective management, thus we must always produce a collection of standards for format and create the sensory information be shared and managed simply. Within the future, sensible campus wants the large breakthrough on data assortment, chip analysis and programmed algorithmic rule.

VII. Application

The application of campus could be a combination of IOT and cloud computing supported the high performance computing and therefore the web. By the means that of accommodating the systems (such as teaching management system, attendance system, library management system) as a mix platform, campus will create lecturers, students, parents, enterprises and researchers ready to manage, communicate and study. The appliance of campus consists of teaching management, library management, attendance management, etc. campus realizes the cardboard management as well as attending access management card, card etc.

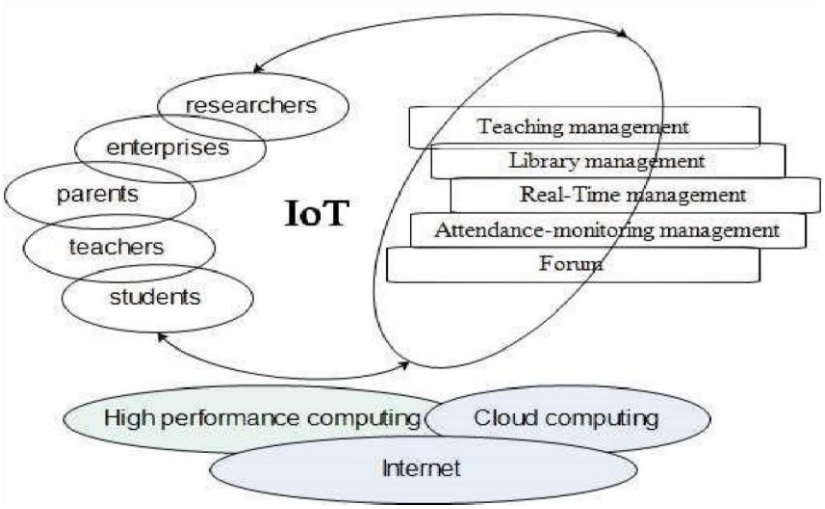

Figure 5: Smart campus application framework

VIII. Conclusion

In this we tend to mention the relevancy of cloud computing for the worldwide education sector within the context of the campus of the longer term. We tend to known variety of challenges that require to be self-addressed, and showed however cloud computing will give a part of the holistic solutions. A brand new perspective within the application of cloud education at intervals succeeding generation intelligent campus surroundings has additionally been introduced. We should smartly develop a supervisor call instruction sensible campus, as a result of sensible campus may be a new intelligent type of campus data, and it's the support circumstances of the education development and campus development. Sensible campus will satisfy the demand of user education and atomization, and may offer the simplest service through cloud. We are able to construct a brand new teaching and management network all over, in short, we should always construct a secure, stable, Efficient, inexperienced campus, and build sensible campus as integral a part of the sensible, earth. A number of promising comes are place in situ and that we mentioned aspects of however

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they integrate at intervals the larger vision of the campus of the longer term, and the way they tackle a number of the problems we've got known during this article.

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