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A Review on "Smart DEI in Ubiquitous computing"

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Abstract— Anything, any time, any where technology is also popular as ubiquitous computing or pervasive computing in which individual can access any thing like home appliances (refrigerator, washing machine , TV , AC, Microwave etc.) remotely. Also When the person cannot be present on the different places at the same time he is able to access the things from anywhere anytime with the help of any thing. Ubiquitous computing is mainly depends on Smart devices, Smart environment , smart Interfaces . This is also called as smart DEI and pronounced as smart 'day'. Here the term smart refers to the entity which is active ,digital, networked, reconfigurable , highly available and can access the resources like energy or storage. Simply ubiquitous computing has played a main role for making our lives simpler by saving our time and providing the remote access.

Keywords—Ubiquitous computing,pervasive computing, Smart devices, smart environments, smart interfaces.

I. INTRODUCTION

Ubiquitous computing has made our lives simpler through digital environment by providing remote access to everything that's why it is called as anything anytime anywhere technology. Why ubiquitous computing is needed? In this era of technology the physical environment is being replaced by digital instruments with control systems and embedded sensors. Smart DEI model is the base of Ubiquitous computing. Which consist of smart devices, smart environment and smart interfaces.
Let's discuss about some applications with ubiquitous computing:

Applications	Without Ubicom	With Ubicom
Personal memories	People used to capture photos with cameras having roles and different lenses. Every time they need to change the lenses as per the requirement.	Can capture and store audio video image with single device.
Adaptive transport schedule service	Enquiry about the schedule of buses was available on bus stands only	Using GPS can track timings easily
Foodstuff management	Need to check expiry date food content etc on the packets	Scanners are available which displays the quality content and expiry date of the product.
Utility Regulation	Need to switch on/off fan lights manually	Automatic switch on/off for light fans

II. LITERATURE SURVEY

'Enhancement of educational classrooms with the help of Ubiquitous Computing'
This paper examines usage of ubiquitous computing in classrooms of higher education.It surveyed different ubiquitous computing devices to show how and to what extent the ubiquity can be utilized to enhanced the learning process. It examined the use case for distance teaching &availability of study material via mobile[1]

'Access control using threshold cryptography for ubiquitous computing environments'
This paper presents a setting mindful access control instrument that uses threshold cryp- tography and multilayer encryption to give a dynamic and genuinely conveyed strategy for access control. This component is firmly combined with the context-capturing services and security strategy benefit bringing about a completely setting mindful and consistent access control system for ubiquitous computing.[2]

'Smart Augmented Fields for Emergency Operations'
This paper described a framework "SAFE" (Smart Augmented Fieldfor Emergency) for community of rescuers in rescue mission. SAFE relies on wearable computing with real world technologies with intelligent agents and multi-agent systems[3]

'Ubiquitous manufacturing system based on Cloud: A robotics Application'
In this paper, a cloud based system is evolved ubiquitous manufacturing.Here amalgamation of physical entities are planned & production planns are developed. The system is checked by 3 case studies. A local server-driven architecture is developed to fight conflict between local connections & internet communications.Safety& Security is also looked into for cloud robotics involving resourec,communication ,learning Constraints[4]

'Access control management for ubiquitous computing'
ubiquitous computing is accessing anything anywhere which gives rise to security issues like protecting confidential, private data from criminal users.In this paper usability control model for protection of service provided and the devices applied is presented.For the protection of data & objects from criminal attacks the model keeps an eye on server & client side and created different protected architectural solutions. It considers the decision factors like authority,agreement,circumstances also consistency during usage control[5]

'Information centric services in Smart Cities'
In this paper emphasis is given on circulation of essential data to make the city smart.The essential data can be effective transportation system, public administration, energy,water,waste management applications, developmental plans for urbanisation, health care systems, public safety, health-care, education,social,environmental concepts.All the concepts are depicted as use cases for urban environment. ICN rationale considered for improvement in communication,mobility, security for next generation wireless technologies. In this usage of the NDN architecture as a connection point between the service layer and the technological layer is shown[6]

'Privacy protection by typing in ubiquitous computing systems'
This paper presents a privacy type system which controls concurrent, context-aware,mobile methodologies to protect the private data from getting leak. The privacy type proposed uses concept of tagging relevant components for the sake of information exchange[7]

III. APPLICATION AREAS OF UBIQUITOUS COMPUTING

A. Military: Ubiquitous Computing plays a very vital role in military sector where closely meshed up, interrelated, multidimensional data is to fetched and processed to get the information to rule down the external threats. It is also involved in development of new weapons [8]

B. Automated Recognition: Smart Card is useful for automatic identification. Smart card comprises of microcontroller chip. . The security of the card is maximum and execute encryption and certification process. The application lies as for transaction, media, shielded integrity function, etc. The smart cards can be divided into two types: i)Contact ,ii)Contactless

The Technology of Biometrics comes under Automated Recognition & is very protected and appropriate method of Automatic Identification Technology(AIT).It exercises identification and acceptance of an single person access to PC.It considers retina, DNA, iris patterns, fingerprints for identification of individuals. This is a boon considering the security aspect[9][10][11]

C. Localization :The GPS comes under localization which is mainly used to find the location of object within the geographic and geometric scales making use of GPS receivers & visible GPS Satellites[11][12][13]

D. ***Different types of sensors:*** like thermal, acoustic, seismic ,radar, infrared magnetic etc for finding out pressure ,humidity ,noise levels temperature which makes the weather forecast and other things convenient[11][14]

E. ***Industry*** is focused on use of RFID Tags.

Advantages:

1.Identification of goods at any point of time is assured.

2.Forecast of supply & demand for specific products is fast & perfect.

3.It is secure against theft.

4.It performs the operation of automated recording of product in consumers cart.

Disadvantages:

1.The RFID labels are costly to be used for low priced goods[15][16][17][18][19]

F.Usage in Export System:It is always essential to find out what is the location of product at any time. . Ubiquitous computing is helpful in such situation where goods are furnished with communication and computing efficiency to find the location of goods.

Advantage:

1. Ubiquitous computing enriches logistics processes through proper planning and instruction flow.
2. Automation is need of hour for logistics business
3. The long term goal of this industry is that through the use of Ubiquitous computing goods should find their way to recipient.

Disadvantage:

1.The RFID labels are costly to be used for low priced goods[15][16][17][18][19]

*G.****Healthcare****:*Ubiquitous computing plays a vital role in qualitative betterment of healthcare system. Its application involves usage of advanced technology of sensors & sensor networks. The important parameters of the patient are recorded by indulging sensors into body or clothing. All the data gathered is analyzed which is very helpful to save the lives.

Advantage:

1.Heplful to make life better.

2.Automated,distant diagnoses of patient is possible

Disadvantage:

1.As it is sensitive data so it must be highly protected to avoid the misuse of it. [15][16][17][18][19]

H.Mobility & transport:

The application of ubiquitous computing is noticeable in order to control the traffic flow which is made possible through VANETs, vehicular ad-hoc network.

Advantage:

1.It enhances the safety during travel time.

2.It improves the traffic flow.

3.It looks after the comfort zone of people

Disadvantage:

1.As it has influence on users privacy it may suffer from rejection. [15][16][17][18][19]

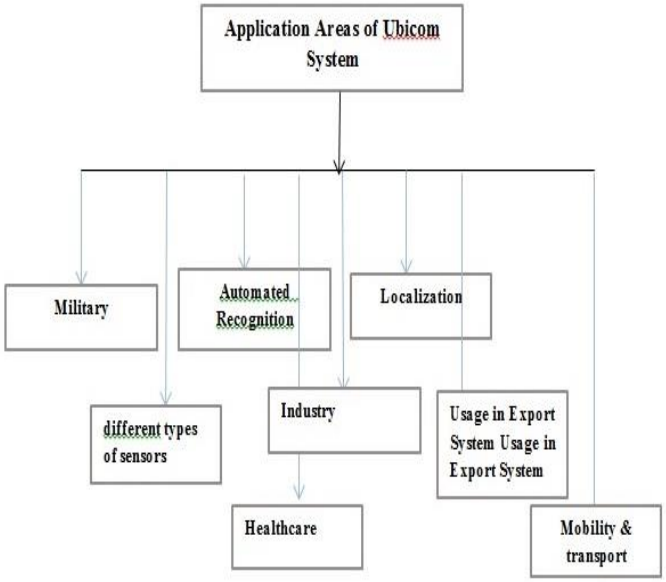

Figure 1: Applications of Ubiquitous Computing

IV. CONCLUSION

A lot of research is being done in the field of ubiquitous computing.Many applications have been created on the concept of connected anywhere everywhere. Ubiquitous computing comprises of many technologies like laptops, tablets,sensors etc.The required qualities of ubiquitous computing systems :transperency, autonomous, supporting all kind of communications such as (HCI, CCI, and CPI),less human intervention and high privacy.Many technologies are introduced in of Ubiquitous computing environments. This paper aims and focuses around applications that relate to today's innovation and have advantageuous business impacts and which recognizes the potential that of ubiquitous computing. The applications can be stated as identification of location, security, sensor industry, communication,defence,health etc.The above mentioned applications have introduced comfort zone for the human beings and also enriched the lifestyles of the people.It has also contributed to theeconomy of the people. This pape alsor highlighted ubiquitous learning by supervising modern portable devices,it also considered continuity as a factor along with authorizations for access management,it also presented system called SAFE used for the rescue missions on emergency scenarios

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