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A Comprehensive Survey on the Issues in Context Aware Computing Issues for Real Time Application

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Abstract: A pervasive computing describes that users can communicate anywhere with any system. In this environment, most people are invisible and networked systems are aware of the context as well as peers. In this context, people interact with the integrated computer. In the meantime, they can deliver services or efficiently utilize services from peers. Context awareness is an important terminology in computing that can sensitively adapt its physical environment. Topics include context accuracy, reliability, situation of conflict, unexpected adjustment, power management. Various techniques and solutions are recommended and considered to avoid these problems in this survey. In order to recognize not only the current context but also can predict the future context, context prediction is used. However, centralized architecture can be handled alone and still not implemented in the decentralized system. Policies for conflict resolution are used to deal with the conflict situation. This is helpful to improve context awareness performance. And middleware Internet of Things deals with scalability, incomplete data and conflict resolution. We need an efficient intelligence system in order to avoid all of this scalability, conflict and complexity problem. The energy problem arises in context because of large, complex data and long computing time. During the whole process, user position authentication and information should be kept. That's why we talked about security and privacy at last. The following work analyzes and offers solutions to the various problems and challenges.

Keywords: Context aware, Pervasive computing, Location, Power Management Context Recognition

I. INTRODUCTION

The Pervasive Computing is also called all-round systems that focus mainly on context awareness techniques. In fact, diverse data characterize the overall information devices and interviews are conducted anytime, anywhere and any type of device. Mainly NNN paradigms (aNywhere, aNytime, with aNything) are the functions of pervasive computing [1]. The ability of a digital artifact to communicate to their physical location is the most characteristic of conventional computers. Computers have generally been detached from the circumstances in which they are used and have recently become aware of the location and context. Location and context are taken as keywords in general computing. We have greatly increased the interaction between system-human and system-multiple systems. More general focus on context-awareness like smartphones (Google maps, Gmail and yahoo mail) is driven by the latest online technologies. Context-aware applications and services require wireless network, user infrastructure and middleware foundation equipment. In addition, network, middleware and user communications application and technology are based on concept and research activities. The context-conscious is an important aspect in computing. Context awareness is a mobile or cloud computing element. This is used for location awareness in addition. While the location determines how some process works in a system, context can be added to make mobile users (e.g. smartphones) more flexible. Context-conscious devices can also try to devise the present situation of the user. Context is any information used to represent an entity's location. However, some factors in terms of prediction, overhead communication, comprehensive context, and unauthorized user access affect context awareness. Context modelling, recognition, reasoning, context quality, unexpected adaptations, power management, security and privacy are the major issues covered by the project we report. Prediction of context enables a system to be truly proactive. This may involve actual economic costs for industrial applications. In the overall computation of context-conscious systems, conflicting situations can be handled while data collection and highly contextual data is collected. Use context quality parameters [2] to reduce this problem. Context-conscious systems are computer systems that provide customers with information and services through development of

context. All must, however, protect their personal information. People don't like to reveal who and what services they want outside of themselves [3]. As an all-embracing compute technology, smartphones remain one of the main issues with their power consumption

II. LITERATURE SURVEY

This survey recommends different types of techniques and analyses problems, challenges and performance. Web ontology approach to contextual modelling and reasoning is better, as is the case with Context Broker Architecture (CoBrA). For power reduction, a context-based prediction method is recommended. Few authentication policies like Gaia Authentication, Mist- Privacy Communication, Dynamic Safety Policies and Access Control are introduced to maintain privacy and security of sensitive context data. Technique used for handling the problems of context awareness and few solutions have been proposed to avoid these problems. This literature survey considers few methods and policies to address the problem and to decrease problems in computer science. Context modelling, reasoning and recognition Context modeling is described as an environment that encompasses certain devices and context that is an element surrounding devices. Context acknowledgement identifies the user situation. It includes what situations are recognized from context and how they are recognized. And thinking deals with the situations of uncertainty. Web ontology provides semantic context for specific users. Web ontology. The context modelling framework focuses on the clarity of information and representation, sense and use. Context modelling framework

It describes the common behaviours, including temporal nature, insecurity, imprecision, incompleteness and privacy, of contextual information. Special requirements for general computer environments such as distribution, mobility and heterogeneity of context devices should also be addressed in the context model. Support for automatic context thinking must therefore be improved. Some of the existing contexts modelling approaches are the key value models, model markings, graphical models, object-oriented models, logical and ontology-based models. Every approach above is based on the concept of ontology. This system offers a set of ontological ideas for describing entities like people, sites or other types of substances in their contexts. In particular in intelligent conference rooms, the Context Broker method uses broker centric agent architecture for providing runtime support for context-aware systems. However, these methods do not apply to a computer environment that is heterogeneous. The MUSIC model containing three layers is conceptual, exchange, and functional in order to overcome this problem. The conceptual layer used for the description of contexts like objects, scope and illustration is used to develop the Model Derived. It also depends on the standard language of specification such as UML and OWL [5]. Because of this structure for contexts, rules and their semantiquity, the process makes context thinking easy. The semantically concept needs to be illustrated in the context management system using context data or element. Context awareness gives contextual consideration and decides on the actions to be initiated. In order to support contexts efficiently [6][7], ontological approaches are used. For interoperability between computer systems the aim of the exchange layer should be used. The context information in this layer is shown as an adequate representation such as XML. For the actual implementation of the context model demonstration and the interior mechanism for different modes the functional layer is used. With the concept of ontology, a common vocabulary of concepts is established and the contextual information is explicitly addressed in the general computing process. However, in the case of a limited source and resulting from the connection mechanism, it creates a serious problem with devices.

III. CONTEXT RECOGNITION

On the basis of context recognition, the critical situations in general computing can be avoided. The context information of low-level sensor data is recognised and predicted at high level. Using a distributed context-conscious system with context prediction, a fine grain dynamic power consumption prediction can be generated, improving approximation accurateness and reducing losses by a faster, automated reaction[6][8]. In decentralized architecture, this is however not possible. Context prediction provides a description of the problem mostly informally. These methods also cannot cope with the situation of conflict. Conflict Situation In the collection and extraction of high level context information in computer systems and mobile devices, context-conscious systems face many more contradictory situations. Context quality is useful for providing solutions with contextual information for unsure and conflicting situations. These problems are addressed by the quality of context parameters. Why this problem occurs means that first raw data must be collected and then high-level context information extracted from these data. The context information must then be combined and saved and finally supplied to certain users after removing repeated and inconsistent contexts. Due to the performance of the above tasks, several conflict situations occur. These contradictory conditions influence powerfully the potential to adapt context-conscious systems in pervasive environments to developments[9]. In conflict situations, few existing methods could be resolved. But these strategies may slow down the decision-making process, divert the user, or delete only a few major context objects[10]. Therefore, new context parameter quality method introduced to avoid this drawback. It is described as being up-to-date, trustworthy, complete and meaningful in determining the quality of context information. Therefore, the conflict situation of the context-conscious system must

be analyzed in this method and proposed solutions depend on QoC parameters. Up-to-dateness shows the degree to which context objects can be exploited in a certain time instance. This method can be used to determine conflict in an object of context, which quickly changes its value, e.g. a fast-moving vehicle's location. Confidence is the quantity of the suitability of a sensor to collect a particular type of context. To measure this type of information, we have to calculate the confidence of a context object in the space resolution and accuracy concept of the sensor. This concept is especially helpful in conflict resolution when more than one sensor collects the same entity or event context. To get a comprehensive picture of current real-world conditions, the completeness of a context object is mainly important. According to this policy decision the context object with more information on the current situation shall be based on this contextual object. Measure the value or valuability of the object of context. This metric is especially important if there is a high critical value context object. Dispute situation with QoC parameters [11] [12] based on the thress value. Because of unresolved problems, the situation in general computing sometimes unforeseen occurred. The most demanding challenges are managing the loads of users and things provided that the heterogeneous things are interoperable and that the unknown dynamic environment is overcome by mobility. In order to deal with unexpected situation, Service-Oriented Architecture (SOA) has been used. In this situation, even a simple service detection or composition can go beyond acceptable time, communication costs and resource consumption. If a large number of demands have been received, then a complicated coordination has occurred among millions of things and services. We revisit the SOA itself together with the features of conventional service-oriented middleware to overcome those challenges. In particular, we present a subject-based SOA which removes heavy communications and computations from service consumers. All tasks in SOA focus on a logic which one or more services can satisfy. Thing-based SOA and a middleware to solve the large, heterogeneous, and unknown problems of the mobile IoT environment. However, this method still lacks the concept of privacy.

IV. PRIVACY AND SECURITY

The key issue is the issue of privacy and security. We therefore need to improve the context sensing security mechanism in computer systems. The term Authentication, Mist-Privacy Communication, Dynamic Security Policy and Access Control are used to deal with this issue. Authentication mechanisms should achieve a balance between authentication and non-intrusiveness within the overall computing environment. This allows the authentication process to authenticate the principals with a variety of means. These include wearable devices, facial recognition, intelligent badges, identification of fingerprint, retinal scans, etc. The logic employed includes temporal and fugitive operators who enable the policies to capture context or time information, such as revocation, in certain circumstances, of authentication credentials etc. It is sensitive to accommodate different levels of confidence and to take context into account because of the various authentication methods and their different strengths [3]. The dynamical security policy includes program modules which correspond to the dynamic implementation of the policies and can be implemented in the appropriate software context by implementing them. Dynamic policies allow the creation of tailored on - the-fly programs, the implementation and implementation of strong safety policies which can be adapted to changing software environments. Another mechanism is mis-confidentiality that enables certified individuals to access services while protecting the privacy of their location. This is an overview of how Mist functions. Mist contains an overlay network that preserves the privacy of Mist Routers.

This network facilitates confidential communication via hop-by-hop and manage-based routing protocol via packet routing. In the first setup of these handles, we use public key cryptography. These methods make it impossible for snoopers and untrustworthy third parties to create messages. A protocol based on handles is a unique Mist Router identifier. Each incoming packet which the Mist Router uses to detect the subsequent hop to the packet is contained in "Income Management." Early than the packet broadcast, the arrival handle is exchanged with an exit handle. And the hop-by-hop routing protocol will allow a Mist Router to promote the next hop packet when the original source and the final destination is hidden. We recommend an innovative group of policies called dynamic policies in order to tackle the new challenges and challenges in the description and administration of security policies in general computer environments. We discover the kind of security promises that may be made before, during and following the implementation of dynamic policies on the system state. We believe that safety issues must be incorporated into system behavior models, and security policies must be an important component in system delivery.

Power consumption is an important issue for mobile devices or computers. Also, in general computing, why the energy problem arises means they operate in a changing dynamic environment [14]. This applies both to user requirements and to computer needs. In the networking and CPU processing of smart phones, this can also be handled. But the broad adoption of cloud-based services is a bottleneck. Due to the fact that more users need different type of information carried by several devices, the complexity arises in the context-conscious system due to the increased interaction between the context consumers and suppliers.

So designing software components are somewhat difficult for energy devices like these. Sometimes it has a major impact because of the lack of important emergency information. Researchers have also addressed the overhead power problem in context, even more modern energy devices found. The overall power consumption in both users and providers was reduced by a mobile context broker, for example, only for particular users and specific parameters. This allows us to further enhance both complex questions and the set of devices.

V. CONCLUSION

Major types of problems in general computing are discussed in the above literary survey. Context-modelling, reasoning, recognition, conflict, unexpected adjustment, security and privacy, as well as power management are issues. Context performance, algorithms and data structures and reliability questions are also a few additional factors. Ontology based approaches help to manage context modelling and context consciousness rationalization. In general computing [15] it provides a clear representation of the context. Context parameter quality describes what is valuable information for a particular use. This improves the efficiency of context-conscious systems. SOA can handle the decentralized approach and advance context-conscious scalability. Computer environments are improved with few authentication schemes to provide security and privacy. The problem of energy consumption was created due to complex computing times and limited energy resources. Finally, we conclude that more new techniques are necessary in the future to improve and enhance efficient context awareness in computer science.

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