Review on Classification of Industry, And Education in Internet of Things

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ABSTRACT: ***The Internet of Things (IoT) is developing rapidly and becoming a hot topic around the world. On the basis of the reorganized Unit IoT and Ubiquitous IoT, two models for Future IoT are proposed in this paper. A dimension model is established to classify the complicated IoT technologies and a layer model is built for Future IoT system architecture. Then, the IoT vision and its development phases prediction are presented. Furthermore, the thought of regarding IoT as an emerging industry is explained to be inappropriate because IoT is a new stage of intelligentization and informatization development. Meanwhile, the necessity of training qualified personnel in colleges is introduced. Then, the relation between IoT and the science and technology system and IoT relevant subjects is analyzed. At the end, this paper raises the problem of setting IoT as a major in college and proposes some suggestions.***

KEYWORDS: ***Education, Intelligence, Internet of Things, Industry, Sociality.***

INTRODUCTION

The Internet of Things (IoT) has attracted worldwide attention rapidly, especially in China, where IoT is upgraded to a significant position and attached great importance to. Many IoT architectures have been proposed and their fitness for Future IoT is under consideration. Because IoT technologies are very complicated and need classification, the dimension model and layer model for the system architecture should be studied. To guide IoT development appropriately, the IoT vision and its development phases prediction should also be considered. Along with the increment of commercial interests brought by IoT, it is taken for granted as an emerging industry by some people because they feel industries engaging in related businesses such as sensor network, radio frequency identification (RFID) and logistics all belong to the IoT industry. However, we should recognize that the ‘emerging industry’ is based on many traditional industries that have existed already[1]. It is taken for granted, along with the rise in business interests brought about by the IoT, as some individuals are developing industries because they believe that industries are involved in related companies, such as Radio frequency identification (RFID) and logistics are both part of the IoT industry as a sensor network[2].

Nevertheless, we must understand that the 'emerging industry' is focused on many conventional industries. Related technologies and subjects of the Internet of Things are complex so that we cannot set the IoT as a major for undergraduate students in college like other majors[3]. Although the current situation is not sufficient to set IoT as a major due to the lack of a standardized curriculum, IoT major training materials and teachers at present, IoT major is encouraged and sponsored because in many places and industries the demands of IoT trained workers are urgent. To this end, we are exploring some ways of creating IoT as a college major[4].

This paper is structured as follows: Section 2 shows the relevant work regarding IoT architectures, industry, and education. The framework for Unit IoT and Ubiquitous IoT (U2IoT) is reorganized in Section 3 and a dimension model, a layer model, IoT vision and prediction of its development phases are proposed. Section 4 clarifies that the IoT is not an autonomous field and discusses the interplay between the IoT and society[5]. Section 5 raises the question of setting an IoT as a key in China and discusses ways for colleges to overcome it.

DISCUSSION

1.Some Models and Development Vision for Future IoT

1.1. Reorganized U2IoT architecture for Future IoT

Unit IoT applies to solutions for special applications. Ubiquitous IoT refers to the national IoT, the global IoT, commercial IoT, or local IoT, which is a multiple unit IoT integration of 'ubiquitous' characteristics Future IoT architecture is a reorganized mix of Unit IoT and Ubiquitous IoT[6].

1.2. Dimension model for Future IoT technology classification based on U2IoT

Since IoT includes several complex technologies, four dimensions are concluded here (4D)

(1) First Dimension: Body

The IoT body includes all kinds of sensors, networks, and data, such as hardware engineering, with centers. The key function, in addition to physical equipment, is to discuss the output of the system, network, access, interoperability, versatility, and accuracy. What is more, it is a must to meet the developing demand for infrastructure in underdeveloped regions around the globe[7].

(2) Second Dimension: Processing

Processing means software engineering. Many functions are included, such as identifying, coding, resolving, transmitting, storage, searching, security, etc. IoT processing shall focus on the requirements from thing's intrinsic existing and mankind's will, not devices[8].

(3) Third Dimension: Intelligence

Intelligence includes sophisticated network management, smart control, automated decision-making, the making, the thinking of man, and others. 'Self-' is its specificity, such as self-recovery, self-organization, exploration of oneself, self-management, etc.

(4) Fourth Dimension: Sociality

Sociality includes: government and public administration, restriction of moral behavior, and related IoT: Legislation etc. The social regulation for the future IoT is to make cyberspace conform with social space. This dimension is one of the essential requirements of the IoT[9].

1.3. Layer model for Future IoT system architecture based on U2IoT

We will address the traditional three-layer and four-layer models in this section and suggest the new four-layer U2IoT-based Future IoT system architecture model. The IoT is usually divided into three layers from the device architecture aspect: perception. Layer, network layer and layer of the application. In the three-layer model, the integration of various sensor systems is the perception layer; network layer is the aggregation of different communication networks; the integration layer is the application layer. Systems of Application. This model's layers are different from those of the Interconnection of open Systems model Seven-Layer. The layers in the above model are split according to the functions in each layer including communication operations and corresponding network information. In the former model, every layer covers the entire functioning of its processes. However, the added supporting layer in the four-layer model is not identical to the other layers[10].

That is the inclusion of common IoT technologies involved in other layers. The contents of the present It is possible to insert a layer into other layers. It is not a layer to segregate common technologies as one. Needed and unsuitable. The three-layer model is, therefore, more fitting. This paper proposes a new layer model that offers an alternative social model for the three-layer model and U2IoT layer to model three layers. The architecture for Unit IoT is the three-layer model. For Ubiquitous IoT, its architecture is social. Framework of organization, similar to family, community, industry, nation or other organizations that consist of from individuals. Since Future IoT is made up of Ubiquitous IoT and Unit IoT, we are adding a social layer to control the IoT unit for Future IoT. It is responsible for IoT application regulation. Unit IoT is related to the human person in society in order to make it easier to understand the model. The ubiquitous IoT is contrasted to an individual social organization. Since human being's organizations establish partnerships, they should follow those rules in defined organizations for organizations to handle individuals and public activities, society needs social management. Similarly, the model should integrate the social layer to handle Unit IoT in the future IoT. This over the three layers, a social layer is inserted.

1.4. Internet of Things vision and its development phases prediction

In the future, a perfect IoT vision could be an age of "harmony of man with nature," which implies harmony. The real world, human culture and the cyber world are coordinating and coexisting. Where, when the age is coming, human growth will see emancipation from mental labor and knowledge overload, making a second major leap from the first, the industrial revolution, which humanity has emancipated from manual labor admittedly, because of human society's fragility, risks to security and privacy problems can become unprecedentedly severe. However, we say, in the future, solutions to those issues will be carried out.

Early stage: The beginning of IoT early development stage. A typical early prototypal system

The IoT is the scheme of the Electronic Product Code which is a world of vision where all physical objects and an RFID transponder can be connected via a globally unique Electronic Product Code carried from the RFID. Japan also suggested the Ubiquitous Identifications, the previous IoT prototype. Solution to (UID). Using RFID technology to recognize objects is the key feature at this level. Trace them globally and in a special way. Union (ITU) of the IoT study followed by some significant events US government made a positive declaration to improve IoT the European Union launched an IoT cluster research and announced some reports China also announced that it would develop a sensor network as an essential industry. One of the phase characteristics is the IoT sensing system, which not only breaks through the identification of RFID, but also includes a range of sensing techniques, both contactless and remote sensing techniques, including sound, light and electricity sensing.

2. Internet of Things: A New Industry

Many kinds of companies are interested in the IoT. After review of IoT technologies and implementations, this segment examines whether it is acceptable for IoT to be treated as a new industry. Likewise, the interplay of Society and IoT are addressed.

2.1. Internet of Things: a new industry or not?

Wide scope of IoT-related advances is included, for example, coding, recognizable proof, settling, data administration, remote transmission, security, norms, and middleware advancements and so on IoT can be applied for insightful structure, keen matrix, shrewd home, savvy medical clinic, climate observing, mine security the board, and ticket the executives, and so on Indeed, practically all wise frameworks can be alluded to as IoT applications. The wide extent of ventures engaged with IoT is self-evident. Later on most businesses may construct their comparing industry IoT. Cross-territorial IoT is incalculable, while public IoT and worldwide IoT emerge. These Unit IoT and Pervasive IoT will cover all fields in our day to day existence. For a certain something, seeing IoT as a free arising industry appears to be inappropriate. We can't check all additions of correspondences, gadgets, and control industry as IoT businesses. For model, future shrewd framework is a significant application territory, and we can't think about the turn of events accomplishments of shrewd matrix all to be the advantages of IoT. In the twelfth 5-year-plan, China will center on the advancement of IoT applications in 10 fields. In the event that accomplishments of the 10 fields including shrewd home, fine rural, etc. are pooled together to make up another IoT industry, it is wrong that even a piece of the augmentation is respected to be the advantage of IoT. For something else, 'creating IoT will get gigantic financial advantages and the not so distant future' appears outlandish. As of now, individuals are accustomed to alluding ventures taking part in sensor organization, RFID, coordination’s, and smart screen business to the IoT business, covering numerous IT ventures, particularly correspondence and Web businesses. In the event that so many existing industry organizations related to IoT are tallied to IoT, numerous IoT substances exist as of now, with simply a difference in phrasing. Thus, current impressive financial advantages and future hopeful expectations around this arising industry are wrong[11].

2.2. Interplay of Internet of Things and society

Since IoT includes such countless ventures, new openings will be created and extra worth will be expanded, which carry opportunities to social turn of events, including advancing business and financial turn of events. Society additionally influences IoT improvement. For example, the Chinese government establishes a great arrangement climate for IoT improvement. The Twelfth Five-Year-Plan Blueprint for Public Monetary and Social Advancement of China brings up 10 fields of IoT applications that need colossal venture The fields cover shrewd lattice, clever transportation, keen coordination's, savvy home, climate and wellbeing testing, industry and robotization control, medical services, fine agrarian, money and administrations, and military safeguard. In these fields, Unit IoT and comparing industry IoT are incredibly upheld to be fabricated and created. IoT and society advance the advancement of one another.

CONCLUSION

In summary, this paper reorganizes U2IoT architecture for Future IoT, based on which a dimension model is proposed to classify the complicated IoT technologies and a layer model is built for system presentation. After analyzing relevant issues on the industry and education, we conclude that IoT is not a specific industry but a new stage of intelligentization and informatization development. IoT involves every field in the science and technology system and its technologies cover most subjects. It is a challenge for colleges to set IoT majors for undergraduate student's ways to solve the problem are also proposed.

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