

A Study on Internet Technology Perspective Applicable in Industrial Environments

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산업환경에서 적용 가능한 사물인터넷 기술 전망에 한 연구

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요약 사물인터넷은 세상의 모든 물건에 통신이 가능한 안테나를 설치하여 정보를 교환하는 상호 소통이 가능한 인프라를 말하며, 사물인터넷이 4차산업혁명의 핵심인 이유는 데이터의 수집을 사물인터넷을 통해 이루어지기 때문이다. 사물인터넷의 기술과, 사물 인터넷의 동향 IoT(Internet of Things)는 인터넷 연결이 가능하고 각종 센서를 탑재한 디바이스간 커뮤니케이션이 가능하다는 개념으로 lot의 핵심 IT 트렌드로 빅데이터, 모바일, 클라우드와 같은기술들을 열거하고, 4차산업혁명의 핵심인 사물인터넷의 중요성과 빅데이터의 처리 및 분석기법등에 대한 연구를 통하여 산업환경이 발전할 수 있도록 정보를 제공하고 각종 보안 대책과 향후 기술을 제시하여 산업경영에 기여하기 위하여 본 연구를 진행하였다.

키워드 : lot기술, lot동향, lot보안대책, Iot 시장분석, 빅데이터의 처리 및 분석기법

Abstract The Internet of things is the infrastructure that can communicate with each other by exchanging information by installing antennas that can communicate with all things in the world. The reason why the Internet of Things is the core of the Fourth Industrial Revolution is that data is collected through the Internet to be. Technology of things Internet and Trend of Things Internet IoT (Internet of Things) is a concept that enables internet connection and communication between devices equipped with various sensors. It is the core IT trend of lot, technology such as big data, mobile, cloud And to provide information for the development of the industrial environment through research on the importance of the Internet of things, the core of the Fourth Industrial Revolution and the processing and analysis techniques of Big Data. By providing various security measures and future technologies, This study was conducted to contribute to management.

Key Words : Iot trend, Iot technology, Iot market analysis, security technology

1. Introduction

Internet of things lot 'objects that tell, say, report and inform (collect and process information) and act on the Internet are objects that collect and

process information, send and receive information, act, There are users, things, and services. In this way, it is important that the technology that helps the user to interact with each other well. The main

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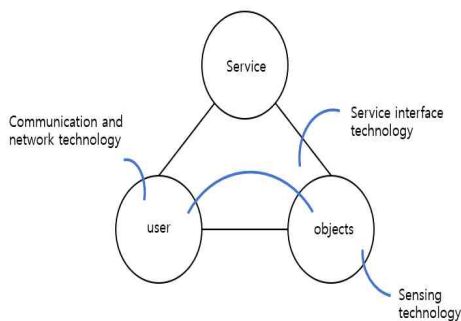
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technologies of the Internet include 'sensing technology' for collecting information from objects in the surrounding environment, Network technology and wired / wireless communication ', and' service interface technology 'which can process information about various services and their desired form. In addition, the Internet of Things also provides intelligent services that utilize these technologies well . As the core of intelligent services, information collected by various objects, the more the amount of information, the more accurate and good the service of the things Internet. So Big Data is one of the keywords that does not fall into the things Internet. The relationship between Big Data and the Internet is shown in the figure below.



[Fig. 1] Big Data and the Internet of Things

The difference between Alpha Go (the artificial intelligence developed by Google Deep Mind) and the things Internet. Unlike the past, it does not produce simple results but produces bigger results. So the Internet of things is important to have ability to collect and analyze data, but there is also a difference in this way.

2. Types of things Internet

First of all, the way to collect data is different, and AlphaGo has thousands of supercomputers to search information, while the Internet has the ability to collect and exchange information using sensing

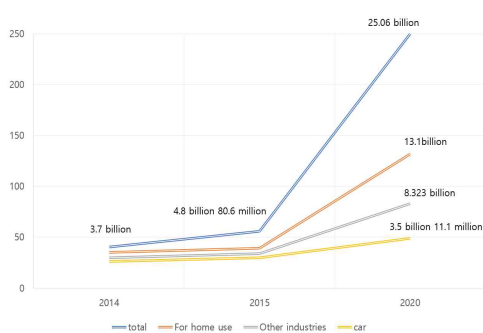
technology. AlphaGo can search various information, Things are limited to users in the Internet.

Second, as a result of differences in the way in which data is collected, AlphaGo analyzes information as a structure of nerves that is made like a human brain. In other words, Alpha is predicting "victory" by working on the sorting out of only the important ones collected during this process. On the other hand, the Internet saves all the information obtained from the user and finds out the stored information from the stored information. As a result, we found that the Internet of things was ineffective in storing and processing unnecessary information, whereas AlphaGo collects a wider range of information than the Internet, and efficiently analyzes the collected information. However, since AlphaGo requires a lot of money, we can see that there are many fields in which the Internet is used.

3. Internet of Things market

So, what kind of internet is used in things? The Internet has already been used in a variety of fields such as agriculture, housing, medical care, unmanned automobiles and so on. A common example of residential objects is the 'smart home' service. Users can control all devices in various fields such as water, electricity, heating / cooling, security devices - surveillance cameras, door locks, etc. through the communication network by using 'smart home' service. In addition, users can manipulate everything in the house at any time and any time, and in the field of agriculture, 'smart farm' service with Internet of things is used. In the case of SmartPharm, the environment (humidity, temperature, etc.) inside the vinyl house can be controlled by using the smartphone anywhere. SmartPhm service is currently being used in Jeju and Gyeongbuk provinces. . It is not far from the

time when farmers are now able to farm enough without having to pay for their jobs. The Internet of Things has also been used in the medical field. Things Internet analyzes the health status of the user and controls the health or attaches to baby clothes. In the case of Internet, it grasps baby's health condition as well as mood and easily transmits it to parents' smartphone. Through this, we have a function of the Internet of things that can be done by individual health consultants, and we will be able to develop to the level that can diagnose diseases in the future. In addition, the Internet of today's things is also applied to unmanned vehicles. Unmanned vehicles can run hundreds of kilometers without the driver's operation, and can automatically park in empty spaces. It also recognizes when the driver is blinking and has the ability to wake the driver by turning the song louder or by ringing an alarm. In the future, there will be an era where you can easily move to your desired destination without any operation. The Internet of things has been utilized and used in various fields, and the scope of the Internet is going to be expanded in the future.



[Fig. 2] Internet of Things (IoT) devices sectoral growth outlook

At present, the Internet industry is expected to grow gradually as government support for home appliances and manufacturing sector is forecast. Includes all ICT resources, including components and

processes. Globally, Internet-related technology and services sales will continue to grow at an average annual rate of 8.8% from US \$ 4.7 trillion in 2012, creating a large-scale market of US \$ 7.3 trillion in 2017 and US \$ 8.9 trillion in 2020 . And things such as various machines and communication equipment that can be connected to the Internet are expected to increase to about 3.7 billion in 2014 and about 4.6 billion in 2015 and 25 billion in 2020, . In addition, 99.4% of the things that are distributed around the world are not connected to the Internet yet.

4. Internet of Things

The market is expected to continue to grow on the back of the expansion of the Internet infrastructure and the growing demand of businesses and consumers. But this is the first security issue as a dark side of the Internet. The Internet of things stores all the personal information such as life patterns, eating habits, etc. through the objects connected to the Internet, so that the personal information of the user is hacked. As the penetration rate of the smart phone expands, The damage of Internet of one thing will be bigger. As for the problem solving, it seems to upgrade the security further by the advance internet. Secondly, as the use of internet as the power supply increases, the usage of electricity increases, The use of household appliances increases the difficulty in supplying power, which leads to solutions and problems of electronic waste. In addition, if we solve the problem with eco-friendly materials, we will improve our life.

5. IoT Industrial Technology Processing Techniques, Analysis

When the technology of the Internet industry is divided into hardware and software, there are

technologies such as chip, module and terminal as hardware technology, and software, such as platform, solution, network and service, A variety of domestic and overseas products are being developed for each technology. Domestic companies mainly produce software technology products. In particular, companies such as Melpeta Petri, Inside, and M2M are developing products in the platform and solution field. SKT, KT And LGU +. As a summary of major business trends of major companies in each core technology field, ARM in the UK, which can be a leader in chip development, leads the processor market for smart media devices such as smartphones and tablet PCs. In July 2013, we set up an internet environment for things at Cambridge headquarters in the UK and started business. In August 2013, the acquisition of Sensinode, which has M2M-related technology, has secured the initiative in the Internet market. IBM, a leading company in the field of module and terminal development, will also develop a 'MessageSight' gateway for connection to the Internet of things in April 2013, so that large amounts of sensing data can be efficiently It is being evaluated as hardware designed to manage quickly.

Cisco, a leader in platform and solution development, is building an Internet environment for things to be limited to things that are limited, but everything in the future, including people and data, is connected to the Internet, IoE: Internet of Everything) is anticipated to come, and it is developing a full-fledged strategy. Smart Factories As a practical application of the Internet, smart factories are rapidly emerging worldwide as a part of strengthening manufacturing competitiveness in order to improve the efficiency of the manufacturing industry, which is currently stagnating. While the factory itself has the function of producing products, controlling and repairing the process, and controlling the safety of the workplace by itself.

In the smart factory implementation, big data

technology is essential for accurate decision making by analyzing vast amount of information through gathering information through the Internet of things. The introduction of the Smart Factory optimizes the production process and also improves process flexibility and performance.

Smart Factories is being promoted as a national strategy from around the world. In particular, Germany has been carrying out 'Industry 4.0' based on 'High Tech Strategy 2020' Siemens' Ambeck factory is recognized as the best example of Smart Factory's application. In the US, 'Advanced Manufacturing 2.0' and 'Intelligent Manufacturing 2025' are being pursued in China. Korea recognizes the importance of 'Smart Factory' and announced 'Manufacturing Innovation 3.0' The Ministry of Science and Industry and the Ministry of Commerce, Industry and Energy are carrying out a Smart Factory pilot project. 'Manufacturing Innovation 3.0' aims to build 10,000 smart factories for small and medium sized factories by 2020, which is equivalent to 33% of small and medium sized factories. In the domestic SW and manufacturing industries, smart factories have been introduced or ready to be introduced, but it has been found that there are many difficulties to apply smart factories immediately in a state where the informatization of the manufacturing industry is low compared to developed countries. In order to solve these problems, we selected eight Smart Factory technologies including the Internet from the government and established a strategy roadmap to support each technology through government projects.

6. lot technology enumeration

1) Sensing technology

Common sensing technology is to measure physical quantities such as temperature, humidity, heat, gas, position, speed, and illumination using

various methods. In the things Internet, information collected through the sensing module is shared with the Internet. It requires built-in smart sensor technology, including modules that can perform basic signal processing and algorithm execution.

2) Interface technology

Object The Internet Service Interface technology is a technology that interoperates with the main components of the Internet (human, object, and service) with application services that perform specific functions. In order to realize various service functions of the Internet, ② Location information based technology such as location determination, location confirmation, situation recognition and cognition ③ Information security and privacy protection, authentication and authorization functions such as 'security' Function' ④ It should be able to serve as an interface that can provide various services through ontology (ontology: a model that expresses a form that can be processed by a computer about what people see, hear, feel and think).

3) Networking technology

In the Internet, networking technology is a wired and wireless networking technology that physically connects various devices in a distributed environment. Wireless Personal Area Networks (WPAN), Wireless Fidelity, 3G, 4G, Long Term Evolution (LTE), Bluetooth, Ethernet, Broadband convergence Networks (BcN).

7. IoT Security Measures

The technology of the Internet of things predicts the era of high-tech service that can change the living space itself smartly while being combined with the user's location measurement technology. Indoor and outdoor location-based services are expected to emerge as user-customized services that have not been activated until now, suggesting new possibilities of mobile services. Intellectual

communication through the Internet is expected to become an essential infrastructure to increase the value of information needed to improve the quality of human life and reduce irritability. In order to revitalize the Internet industry, it is necessary to develop key technologies in the following technical fields to cope with future Internet governance. There is a need to strengthen various security technologies such as user authentication and authorization, access control, key management, identity management, reliability and reputation management and privacy protection of Internet systems, platforms and networks of objects. It is necessary to study data processing and processing techniques for big data for each application.

Finally, the Internet technology transfer of things has attracted attention as a new growth engine of the smart home and smart factory industry globally. In order to improve global competitiveness, it is necessary to secure core intellectual property right before and after related to Internet technology. Joint efforts of the people and the public are needed.

8. conclusion

As we have already seen in the domestic and international trends, the Internet of things is expected to have a big ripple effect on our economy and life by connecting the objects in various fields to the network. The Internet of Things is now a very important time ahead of the arrival of the Internet of Things, after we have prepared for a heightened emergency. Manufacturing and production are also important in the semiconductor and smartphone markets, which are representative industries, but we have felt the importance of solutions and platforms every time we have to, and these important moments are not given again.

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