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Research to do communication and control of equipment by using streaming technology which can treat various data

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• Background and purpose of research

Recently, the network, the computer, and the portable terminal, etc. advanced rapidly. As a result,various equipment had the calculation function, and it came to be connected with the network, and the ubiquitous environment by which information who were able to be exchanged anytime and anywhere is being achieved.

The current, so that the user may use the equipment and service, the user had to proceed to the place with the equipment by which it had the function which wanted to be used. However, in the ubiquitous environment, the user and the equipment dynamically plan the operation based on the situation and the environment, and come to be able to provide service. Because the user and the equipment can use my position, preference, and various sensor information, etc. from an innumerable sensor and the equipment arranged in the space.

In such an environment, to understand a real-time situation and the environment of the space which changes hour by hour; The technology which can in real time communicate a variety of sensor information etc. is needed.

On the other hand, as the network technology advances, we can enjoy live broadcasting the television programs and radio programs or a live image from the live camera set up in various places etc, through the IP network. This technology is called the streaming, and is remarkable. The streaming technology can in real time deliver the image and voice etc.

I did to pay attention to the point to enable the delivery of information with a real-time streaming technology. As a result,If the streaming technology was used, information on a real-time situation of the space which changed hour by hour and the environment can be in real time passed on to the user who needed the information and the equipment. In a word, I thought that the equipment might be able to achieve cooperated operation mutually.

Then, in the main discourse, It aims to treat sensor information and control information by the streaming technology for the space from which the room etc. with which the equipment is connected by wireless LAN are limited, and to achieve the delivery of real-time information between equipment and cooperated operation. To achieve the purpose, a new proposal concerning the streaming technology was done.

• Streaming of sensor information and control information

To do sensor information and control information in the streaming; It proposed to treat as text data by which the person was able to read sensor information and control information. In addition, the text data of sensor information and control information decided to be described by using XML. Structurizing data by XML, and DTD(Document Type Definition) are made. In enabling the verification of the structure of XML, new sensor information and control information can be added comparatively easily by tagging new sensor information and control information according to DTD when new sensor information and control information are added. Moreover, it newly proposed the method to do the text data in the streaming by using RTP(Real-time Transport Protocol) on the IP network.

• Admission control according to priority

In the ubiquitous environment, a position, a preference, and a variety of sensor information etc. on the user and the equipment are used from an innumerable sensor and the equipment arranged in the space. The streaming of sensor information and control information proposes by the main discourse when adjusting to the ubiquitous environment. It pays attention to producing a serious influence on the backbone of the network when a lot of sensors and equipment start the streaming at the same time, and there is a problem with high possibility to cause crowding the network and blockage. It proposed to do the admission control according to priority as a method of this problem of solving one. To set the priority of the admission control; "Division at case" of main discourse by which each sensor information and control information on equipment are classified based on interval of forwarding and timing of forwarding and "Classification" of the main discourse by which the priority of each sensor information and each control information is set based on the combination of "Division at the case" is done. It proposed to do these. The admission control which the main discourse proposes means the sensor and the equipment with sensor information and control information with low priority stop the streaming at random time.

• Summary

The streaming is done as text data where sensor information and control information are described with XML. Set priority to sensor information and control information, and do the admission control according to priority. It is necessary to evaluate be effective these two proposals achieve cooperated operation of the equipment which uses real-time sensor information and control information. For that, The simulation experiment was done, and it evaluated it based on the result. As a result, usefulness the streaming method of sensor information and control information proposes by the main discourse has been understood.