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Distance education system with multi video streams

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Distance education and remote cooperation work are considered as one of the promising applicable fields of the remote service through the next generation high-speed network. In this field, the effect is demonstrated only after information is transmitted to two-way. By video communication like a TV conference or a TV phone which communicates in two-way, the video and the sound were limited only to one until now, and the possible thing for which it restricts, compresses and transmits and an expensive communication circuit and communication apparatus expense are reduced was the indispensable condition of a practical system.

From this, stream number with which a user is provided also in a distance education system compressed by having limited to one, and the user was provided with it. However, at the lesson and lecture which are performed in a classroom, there are multi viewpoints, such as a lecturer, black board, a slide, an output of a personal computer, and a surrounding situation, and the student has chosen these by own intention.

In recent years, the recording method and the high-speed computer which can deal with multi streams came out by development of multimedia technology, or fullness of a network base. Moreover, the a broad band network and the network of a home level are improved, and since a high quality image and a high quality sound can treat easily on a computer in the two-way through the network, the expectation for the remote service which used the network as the base has increased.

As the present reserch trend, it is asking for the improvement in the educational effect from various sides, such as the multimedia distance education system which used WWW as the base, remote cooperation work support system, the serch engine of teaching-materials contents, absorbed type environment where the virtual reality was used, the virtual school using CG.

In this research, multi video stream was applied to the distance education system. The educational effect near the facing lecture parformed in a classroom can be acquired by a student enabling it to choose these video streams. Such a system was designed and the user interface was implemented.

In order to provide a student with multi video streams, needs a computer can real-time processing of multi videos. Also, in order to display the video from multi video stream, user intaerface is need. Proposed the method by which these were solved, and GUI was designed and implemanted.

Implemented GUI was applied to the distance education system. As a result, the evaluation of the systems based on the experiment became possible.

The experiment which used this User Interface was done, and the evaluation questionnaire was taken.

As a result, the effectiveness of the use of multi video streams which were able to be selected to the distance educetion was able to be confirmed. On the other hand, the user selects the video while attending the lecture. It has been understood that the user has the load, compared with a usual classroom lecture and an existing distance education system.

In the future, it is necessary for implement on the network, and to eveluate the systems. This reserch proposed and designed a necessary component for network system. The user can smoothly send/receive the delivery of multi video streams through the network by reserving the network bandwidth to "Band reservation node" beforehand. "Mediation node" is a node which mediates the collision of the reservation of the network bandwidth and the collision of the operation of the network camera. "Management node of time" with both of functions of "Band reservation node" and "Mediation node" was designed.