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QOS IN NETWORKED ENTERTAINMENT

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To achieve high quality of networked entertainment (e.g., networked games, networked haptic museums, collaborative work using haptic media, and networked virtual environments with avatars), we have to solve a number of technical problems. For example, network delay jitter and packet loss may bring serious deterioration in media output quality. Therefore, we need to carry out various types of QoS (Quality of Service) control.

QoS over the Internet is grouped into six levels: physical, node, network, end-to-end, application, and user levels. Yutaka Ishibashi will focus on the application-level QoS and the user-level QoS in his presentation. To keep QoS as high as possible in networked entertainment, we carry out QoS control such as traffic control, error control, media synchronization control, causality control, consistency control, and CPU load control.

He will explain these types of QoS control and then propose an adaptive QoS control scheme, which adaptively carries out the types of QoS control together according to the network load and CPU load. By carrying out an experiment of a distributed virtual environment with video avatars, he will demonstrate the effectiveness of the adaptive QoS control scheme in QoS non-guaranteed networks and OS.

He will also emphasize that QoS mapping, which is mapping of QoS parameters between different levels, is needed so as to satisfy QoS requirements by using adequate amounts of network and CPU resources. In a lip-sync experiment, he will clarify the relation between the user-level QoS parameter (i.e., Mean Opinion Score: MOS) and the application-level QoS parameters (e.g., the average frame rate and the mean square error of inter-stream synchronization) by regression analysis. Furthermore, he will address handover problems in wireless networks in terms of media synchronization.