

Retrieval in Distributed Image Database Systems

2001

Kayo Suzuki

A new image retrieval system using a sketched image as a key are constructed utilizing the proposed image directory. The image retrieval from the distributed image servers using a sketched image as a key was confirmed to be superior to that using keywords. In accordance with experimental and analytical studies, the total processing time of the image retrieval using a sketched image was much shorter than that of the image retrieval using keywords, and the total volume of data required for the image retrieval using a sketched image was much smaller than that for the image retrieval using keywords. On the image retrieval using a sketched image, the processing time was found to be reduced to one half of that in the conventional system when the image directories were installed in the new system. The reduction of the processing time brings the reduction of the waiting time for users in high performance image retrieval systems on multimedia networks. A mathematical model for the waiting time was obtained as functions of the processing time and the rate of occurrence of the requests for the image retrieval. Based on the studies, a high-speed image retrieval system was constructed using an image directory. Based on the experimental studies, the increases in success rate, reduction of processing time, total volume of data transmitted through the communication lines, and waiting time are theoretically derived to define the characteristics of the image database systems constructed using image directories.