



New York University School of Medicine
Office of Industrial Liaison/Technology Transfer

Panorama Project

Graphics

Principal Inventors:

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Description of the Technology:

This technology addresses the problem of navigation of virtual environments over a network by providing a high quality of service with limited network resources. In a typical setup, a virtual environment resides on a server machine, and one or more users explore the environment from client machines. Each client uses previous views of the environment to predict the next view, using the known camera motion and image-based rendering techniques. The server performs the same prediction, and sends only the difference between the predicted and actual view. Compressed difference images require significantly less bandwidth than the compressed actual views, and can yield much higher frame rates. With this protocol, the client simply sends the coordinates of its previous view to the server. This avoids the overhead of maintaining connections between the server and each client. No restrictions are placed on the scene or the camera motions, and the compression technique may be used with arbitrarily complex 3D scenes or dynamically changing views from a web camera or a digital television broadcast.

Features and Benefits:

Present technology requires sending each view over the network, but this technology avoids repetition between frames.

Applications:

This work is applicable to remote exploration of virtual worlds over a network such as the Internet, Digital Television, or high frame rate head-mounted displays.

Patent Status:

U.S. Patent application pending.

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