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Image based rendering – A walkthrough

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Image-based rendering (IBR) is a new powerful approach to computer graphics that allows three-dimensional objects and scenes to be visualized in a realistic way without full 3D geometric model reconstruction. Conventional computer graphics systems use geometry-based rendering (GBR) techniques to render three-dimensional objects or scenes. These techniques produce images from 3D geometric model of the scene which may include a variety of information like geometry of scene objects, position of light sources, optical properties of the surfaces, viewer position and so forth. The main bottleneck of GBR pipeline is that model generation is a time consuming process and is highly dependent on the scene complexity. Further, such systems have a limited ability to construct a photo-realistic virtual environment. Thus, the researchers in the field of computer graphics have recently turned to IBR techniques due to many forces like these techniques are computationally less expensive, close to photorealism and their rendering time is usually constant and does not depend upon the scene complexity. IBR techniques use pre-acquired reference images together with other parameters like depth maps, positional correspondences etc. in order to synthesize the arbitrary views of an object or scene. These techniques have many potential applications in the domains like virtual reality, electronic games, sports broadcasting, 3D-Television, movie industry, mobile/ handheld devices etc. The objective of this talk is to discuss the concept of image-based rendering, fundamental principles behind various IBR techniques and the strengths & limitations of each technique.

Biography

Vishal Verma is an Assistant Professor at Department of Computer Science, MLN College, Yamunanagar, India. He received his PhD in Computer Science from the Maharishi Markandeshwar University, Mullana, India. He is having rich experience of more than fourteen years in teaching blended with core research experience in computer graphics (lighting techniques, rendering techniques and their use in mobile devices), CBIR techniques and knowledge discovery. He has a number of International Journals and conference papers to his credit. He had served as member of international review board to many international conferences and also chaired a technical session in an International Conference in Australia.

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