Three-dimensional Scene Walkthrough System Using Multiple Acentric Panorama View (APV) Technique

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Abstract

In this paper, we propose a novel 2D plenoptic function called "acentric panorama view (APV)." This novel 2D plenoptic function samples the panorama scenes without oversampling or undersampling. A single APV can be accelerated by view culling and list-priority rendering algorithm. Multiple APVs with special fields of view, 45.DEG., 60.DEG., 90.DEG., and 120.DEG., can be integrated into a larger configuration called augmented APVs, which can augment the walking area in a planar walkthrough environment to form a 4D plenoptic function. In augmented APVs, the acceleration schemes of a single APV can still be applied successfully.