Modified Poisson compositing technique on skewed grid

ABSTRACT

Image compositing is the process of seamlessly inserting a portion of a source image into a target image to create a new desirable image. This work describes an image composition approach based on numerical differentiation utilizing the Laplacian operator. The suggested procedure uses the red-black strategy to speed up computations by using two separate relaxation factors for red and black nodes, as well as two accelerated parameters on a skewed grid. The Skewed Modified Two-Parameter Overrelaxation (SkMTOR) approach is a modification of the existing MTOR method. The SkMTOR has been used to solve numerous linear equations in the past, but its applicability in image processing has never been investigated. Several examples were used to test the suggested method in solving the Poisson equation for image composition. The results demonstrated that the image composition was successfully constructed using all six methods considered in this study. The six methods evaluated yielded identical images based on the similarity measurement results. In terms of computing speed, the skewed variants perform much quicker than their corresponding regular grid variants, with the SkMTOR showing the best performance.