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SINGLE IMAGE DEHAZING FOR VISIBILITY IMPROVEMENT

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Abstract. Images captured in foggy weather conditions often suffer from poor visibility, which will create a lot of impacts on the outdoor computer vision systems, such as video surveillance, intelligent transportation assistance system, remote sensing space cameras and so on. In this paper, we propose a new transmission estimated method to improve the visibility of single input image (with fog or haze), as well as the image's details. Our approach stems from two important statistical observations about haze-free images and the haze itself. First, the famous dark channel prior, a statistics of the haze-free outdoor images, can be used to estimate the thickness of the haze; and second, gradient prior law of transmission maps, which is based on dark channel prior. By integrating these two priors, to estimate the unknown scene transmission map is modeled into a TV-regularization optimization problem. The experimental results show that the proposed approach can effectively improve the visibility and keep the details of fog degraded images in the meanwhile.

Conference paper (PDF, 824 KB)

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