

# Single Image Fog Removal based on Fusion Strategy

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## Abstract

Images of outdoor scenes are degraded by absorption and scattering by the suspended particles and water droplets in the atmosphere. The light coming from a scene towards the camera is attenuated by fog and is blended with the airlight which adds more whiteness into the scene. Fog removal is highly desired in computer vision applications. Removing fog from images can significantly increase the visibility of the scene and is more visually pleasing. In this paper, we propose a method that can handle both homogeneous and heterogeneous fog which has been tested on several types of synthetic and real images. We formulate the restoration problem based on fusion strategy that combines two derived images from a single foggy image. One of the images is derived using contrast based method while the other is derived using statistical based approach. These derived images are then weighted by a specific weight map to restore the image. We have performed a qualitative and quantitative evaluation on 60 images. We use the mean square error and peak signal-to-noise ratio as the performance metrics to compare our technique with the state-of-the-art algorithms. The proposed technique is simple and shows comparable or even slightly better results with the state-of-the-art algorithms used for defogging a single image.

## Author Keywords

Airlight, Dark channel prior, Direct Attenuation, Fog removal, Image restoration