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Nighttime Dehaze - Enhancement

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Abstract : In this paper, we introduce a new computer vision task called nighttime dehaze-enhancement. This task aims to jointly perform dehazing and lightness enhancement. Our task fundamentally differs from nighttime dehazing – our goal is to jointly dehaze and enhance scenes, while nighttime dehazing aims to dehaze scenes under a nighttime setting. In order to facilitate further research on this task, we release a new benchmark dataset called Reside-β Night dataset, consisting of 4122 nighttime hazed images from 2061 scenes and 2061 ground truth images. Moreover, we also propose a new network called NDENet (Nighttime Dehaze-Enhancement Network), which jointly performs dehazing and low-light enhancement in an end-to-end manner. We evaluate our method on the proposed benchmark and achieve SSIM of 0.8962 and PSNR of 26.25. We also compare our network with other baseline networks on our benchmark to demonstrate the effectiveness of our approach. We believe that nighttime dehaze-enhancement is an essential task, particularly for autonomous navigation applications, and we hope that our work will open up new frontiers in research. Our dataset and code will be made publicly available upon acceptance of our paper.

Keywords : dehazing, image enhancement, nighttime, computer vision
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