DEHAZING DATASETS AND TECHNIQUES TO EVALUATE CLASSIFICATION METHODS

Goal of the project

We aim to introduce several dehazing techniques and to build a dehazing dataset which can be used for testing and evaluation the effectiveness of existing classification techniques in the context of dehazing. The dehazing dataset will contain real reference and hazy images of the same scene recorded under the same illumination conditions. Based on these dehazing dataset, we will perform an extensive assessment of the existing dehazing methods.

Short description of the project

Development of image dehazing techniques and recording of realistic image dehazing dataset.

Implementation period

01.02.2020 - 31.07.2020

Budget

47.600 RON (10000 EUR)

Main activities

1. Developing state-of-the art image dehazing techniques.
2. Recording of a realistic image dehazing dataset which can be used for testing and evaluation the effectiveness of existing classification techniques in the context of dehazing.
3. Evaluation of the recent image dehazing techniques.

Results

- We introduced/published a realistic image dehazing datset:
1. Codruta O Ancuti, Cosmin Ancuti, Radu Timofte, Luc Van Gool, Lei Zhang, Ming-Hsuan Yang „", Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops, Long Beach, US, June 2019;
2. Codruta O Ancuti, et al „Dense haze: A benchmark for image dehazing with dense-haze and haze-free images", IEEE International Conference on Image Processing, Taipei, Taiwan, sept. 2019.

- We introduced several sota image dehazing/enhancement techniques:
1. Codruta O Ancuti et al., „Color Channel Transfer for Image Dehazing", IEEE Signal Processing Letter , (Q1, impact factor 3.268).
2. Codruta O Ancuti, et al., „Color Channels Compensation (3C): A fundamental pre-processing step for image enhancement", IEEE Transactions on Image Processing , (Q1, impact factor 6.79).

Applicability and transferability of the results:

Outdoor traffic scenes images often suffer from poor visibility introduced by haze. Haze is a common atmospheric phenomena produced by small floating particles that absorb and scatter the light from its propagation direction.

Due to attenuation and scattering, hazy scenes are characterized by poor contrast of distant objects, color shifting, and additional noise.

The outcome of this project is important for computer vision ADAS module in the automotive industry.

Research team

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