# AIDEDNet: Anti-Interference and Detail Enhancement Dehazing Network for Real-World Scenes

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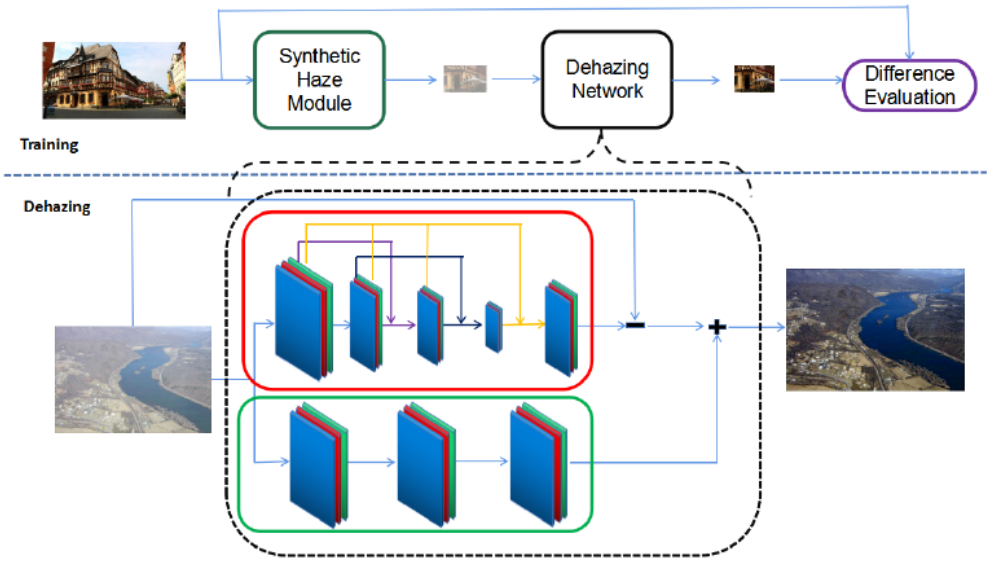
# Problems & Ideas

- Problems of the existing dehazing methods (including deep learning) based on ASM:
  - The atmospheric illumination in ASM is obtained from prior experience, which is not accurate for dehazing real-scene.
  - It is difficult to get the depth of outdoor scenes for ASM.
  - It is difficult to find an accurate physical model and related parameters to describe this phenomenon.

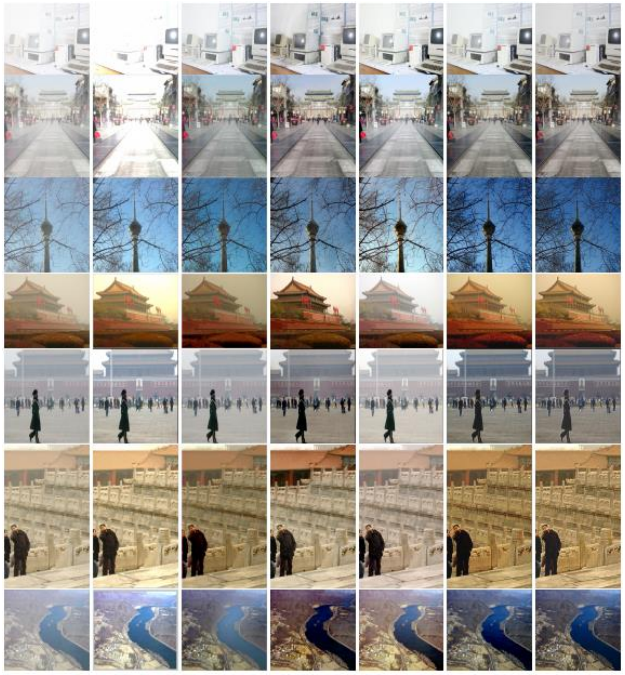
- Ideas: A novel dehazing equation is proposed. The new equation combines two mechanisms: interference item and detail enhancement item. Based on the new equation, an Anti-Interference and Detail Enhancement Dehazing Network(AIDEDNet) is designed.




The overall framework of proposed method

# Main Contributions

- Contributions:
  - A new dehazing equation is proposed, which goes beyond physical models such as ASM;
  - A novel end to end dehazing network is designed;
  - A new way to construct a haze patch on the flight of network training is proposed. The patch is randomly selected from the input images and the thickness of haze is also randomly set.



| | Dark Channel [19] | AOD-Net [21] | GCANet [23] | pix2pix [27] | our $\alpha$ Test | our $\beta$ Test |
|---|---|---|---|---|---|---|
| BRISQUE [30] | 32.17 | 31.49 | 28.82 | 29.36 | 26.53 | **23.63** |
| BLIINDS-II [31] | 28.1 | 26.7 | 24.3 | 27.5 | 25.6 | **20.5** |
| NIMA [32] | 5.42 | 5.48 | 5.87 | 6.19 | 6.37 | **6.45** |

The experiment results. Left: qualitative comparisons with state-of-the-art dehazing methods for hazy images. The first column is original haze image. The comparison methods from the second column to the sixth column are: haze image, dark channel, AOD-Net, GCANet, pix2pix and proposed α Test, β Test. Top: average BRISQUE, BLIINDS-II and NIMA of dehazed results on proposed test set.