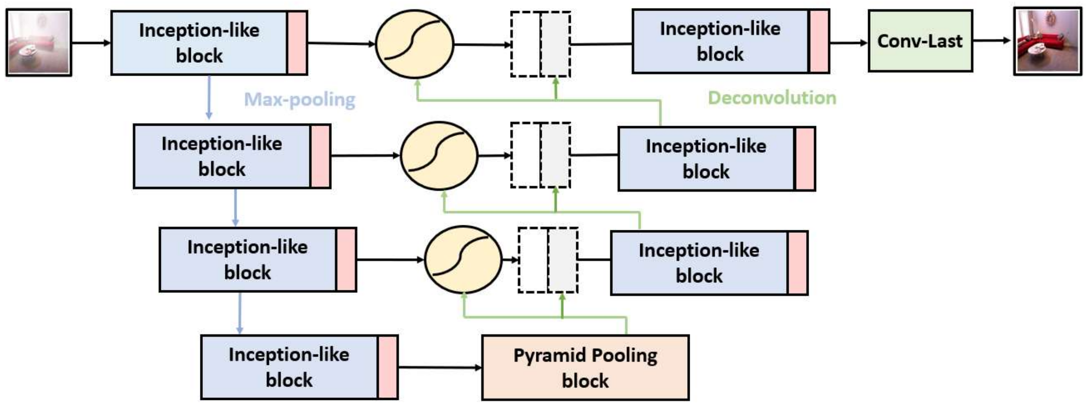
API : Attention Gate based Model with Pyramid Pooling and Inception-like block for Image Dehazing

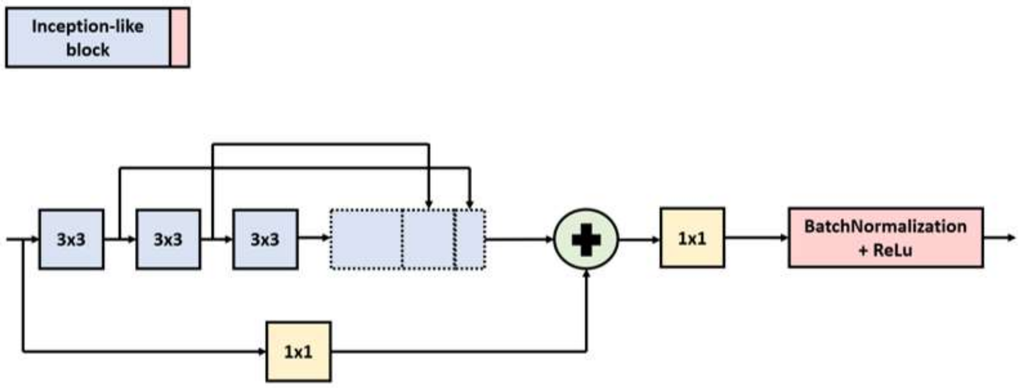
I. Abstract

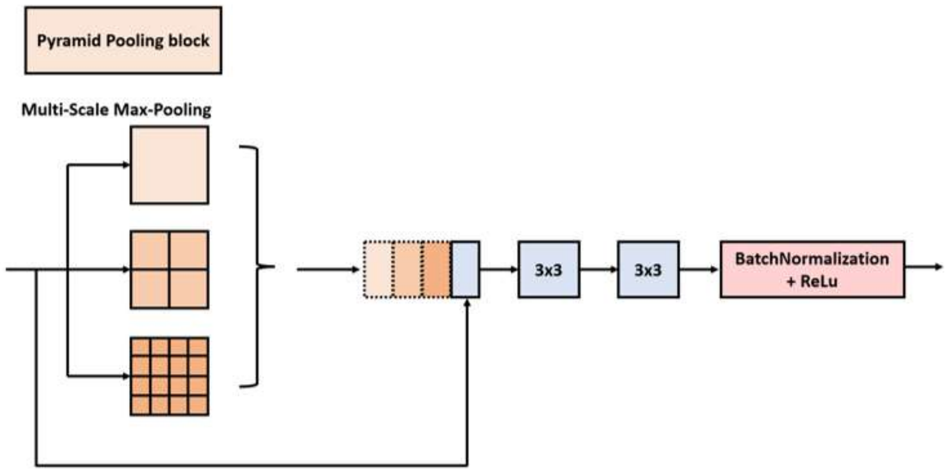
It's hazardous that bad weather condition makes things less clear e.g., haze, fog, heavy rain and snow; to ensure safety in haze, the proposed model, a Deep Learning based method for image dehazing, contains the Inception-like block, Pyramid Pooling block, and Attention Gate mechanism to enlarge SSIM (Structural similarity) and PSNR (Peak signal-to-noise ratio) to get clear image.

II. Methodology

The Inception-like block and Pyramid Pooling block use varying kernel size in parallel to extract different scale features of images in order to enlarge receptive field. Attention Gate is a successful method of image segmentation in medical field. Therefore, I noticed that the haze image losing target structures needs to highlight salient features. Finally, I show the experimental result of image dehazing and compare other state-of-the-art method.







III. Experimental Result

IV. Quantitative Analysis

TABLE I

COMPARATIVE RESULTS OVER D-HAZY DATASET

Method	SSIM	PSNR
CycleGAN	0.6490	13.69
CycleDehaze	0.6746	12.54
DCP	0.7060	11.59
C^2*MSNet*	0.7201	12.71
DehazeNet	0.7270	13.40
CAP	0.723	13.19
MSCNN	0.7231	12.82
DDN	0.7383	10.96
CDNet	0.7411	13.84
RI-GAN	0.8179	18.82
RYF-Net	0.8230	17.56
ReViewNet	0.8239	**20.64**
API	**0.8607**	19.32

TABLE II

COMPARATIVE RESULTS OVER RESIDE-STANDARD SOTS INDOOR DATASET

Method	SSIM	PSNR
CycleGAN	0.5738	14.16
CycleDehaze	0.6923	15.86
FVR	0.7483	15.72
C^2*MSNet*	0.8152	20.12
DCP	0.8179	16.62
CAP	0.8364	19.05
DehazeNet	0.8472	21.14
RI-GAN	0.8500	19.83
AOD-Net	0.8504	19.06
RYF-Net	0.8230	17.56
CDNet	0.8852	21.30
ReViewNet	0.8716	21.44
API	**0.9337**	**22.73**

V. Reference

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