Progress Report

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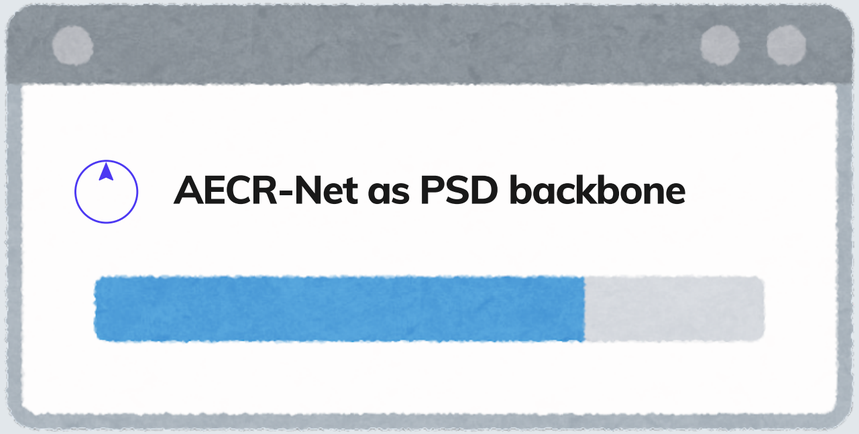


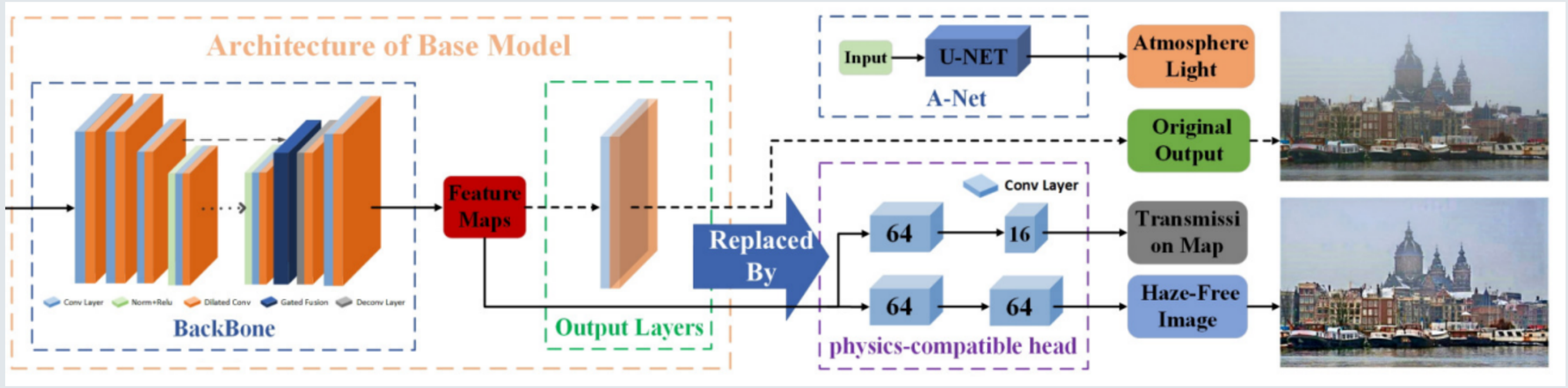
PROGRESS SO FAR

AECR-Net Modification

Preparing for PSD-AECRNet Training

Initial Training Test Results

AECR-Net Modification



Added Modules for A-Net

- BlockUNet1
- G2

self.ANet = G2(3, 3)

Added 4 Conv Layers

self.conv_J_1 = nn.Conv2d(64, 64, 3, 1, 1, bias=False)
self.conv_J_2 = nn.Conv2d(64, 3, 3, 1, 1, bias=False)
self.conv_T_1 = nn.Conv2d(64, 16, 3, 1, 1, bias=False)
self.conv_T_2 = nn.Conv2d(16, 1, 3, 1, 1, bias=False)

Updated AECR-Net's Forward Function

```
out_J = self.conv_J_1(x_up2)
out_J = self.conv_J_2(out_J)
out_T = self.conv_T_1(x_up2)
out_T = self.conv_T_2(out_T)

 if Val == False:
  out_A = self.ANet(input)
else:
  out_A = self.ANet(input2)
out_I = out_T * out_J + (1 - out_T) * out_A

return out, out_J, out_T, out_A, out_I
```

Training Preparation

Training Setup

- The main.py file is hard coded, and the default code is for the training FFANET model.
- RESIDE OTS dataset

Training Settings

- 1.5 ~ 2 hours per epoch

```
num_epoch = 20
batch_size = 8
num_workers=1
```

Validation

- RESIDE SOTS outdoor dataset
- Built-in PSNR & SSIM
- Used upsampling to match dimensions

Testing Setup

- A-Net enabled
- Used the hardcoded Test Dataset
- Outputs predictions to a selected directory

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Initial Training Test Results

Training Results

Administrator: Command Prompt - python train_aecr.py

```
och: 1, Iteration: 8188, Loss: 0.004495410714298487, Rec_Loss1: 0.0017996912356466055, Rec_loss2
och: 1, Iteration: 8189, Loss: 0.005566881038248539, Rec_Loss1: 0.0028186205308884382, Rec_loss2
och: 1, Iteration: 8190, Loss: 0.005758953746408224, Rec_Loss1: 0.0024397498928010464, Rec_loss2
och: 1, Iteration: 8191, Loss: 0.005317874252796173, Rec_Loss1: 0.0027041826397180557, Rec_loss2
och: 1, Iteration: 8192, Loss: 0.003915789071470499, Rec_Loss1: 0.002233638660982251, Rec_loss2:
och: 1, Iteration: 8193, Loss: 0.004313615150749683, Rec_Loss1: 0.0014447669964283705, Rec_loss2
och: 1, Iteration: 8194, Loss: 0.005586735904216766, Rec_Loss1: 0.003296250244602561, Rec_loss2:
och: 1, Iteration: 8195, Loss: 0.004930662456899881, Rec_Loss1: 0.0027666757814586163, Rec_loss2
och: 1, Iteration: 8196, Loss: 0.0032705774065107107, Rec_Loss1: 0.0013840183382853866, Rec_loss
och: 1, Iteration: 8197, Loss: 0.008047126233577728, Rec_Loss1: 0.005267594009637833, Rec_loss2:
och: 1, Iteration: 8198, Loss: 0.00801477674394846, Rec_Loss1: 0.0012403050204738975, Rec_loss2:
och: 1, Iteration: 8199, Loss: 0.0029090323951095343, Rec_Loss1: 0.0016838281881064177, Rec_loss
och: 1, Iteration: 8200, Loss: 0.0042101917788386345, Rec_Loss1: 0.0016630531754344702, Rec_loss
och: 1, Iteration: 8201, Loss: 0.004478928633034229, Rec_Loss1: 0.0030992981046438217, Rec_loss2
och: 1, Iteration: 8202, Loss: 0.005526510998606682, Rec_Loss1: 0.003154415637254715, Rec_loss2:
och: 1, Iteration: 8203, Loss: 0.0035456479527056217, Rec_Loss1: 0.0012460796860978007, Rec_loss
och: 1, Iteration: 8204, Loss: 0.002819217974320054, Rec_Loss1: 0.0018803579732775688, Rec_loss2
och: 1, Iteration: 8205, Loss: 0.002683840459212661, Rec_Loss1: 0.0019542723894119263, Rec_loss2
och: 1, Iteration: 8206, Loss: 0.005403734743595123, Rec_Loss1: 0.0036268080584704876, Rec_loss2
och: 1, Iteration: 8207, Loss: 0.0037576332688331604, Rec_Loss1: 0.0018848031759262085, Rec_loss
och: 1, Iteration: 8208, Loss: 0.004488206934183836, Rec_Loss1: 0.0014569275081157684, Rec_loss2
och: 1, Iteration: 8209, Loss: 0.00667129922658205, Rec_Loss1: 0.003864053636789322, Rec_loss2:
och: 1, Iteration: 8210, Loss: 0.004449685104191303, Rec_Loss1: 0.002997206524014473, Rec_loss2:
och: 1, Iteration: 8211, Loss: 0.006292988546192646, Rec_Loss1: 0.0020608287304639816, Rec_loss2
och: 1, Iteration: 8212, Loss: 0.004626935347914696, Rec_Loss1: 0.0012565086362883449, Rec_loss2
och: 1, Iteration: 8213, Loss: 0.0037178006023168564, Rec_Loss1: 0.0020802165381610394, Rec_loss
och: 1, Iteration: 8214, Loss: 0.002579089254140854, Rec_Loss1: 0.0008838094654493034, Rec_loss2
och: 1, Iteration: 8215, Loss: 0.004006596747785807, Rec_Loss1: 0.002305090893059969, Rec_loss2:
och: 1, Iteration: 8216, Loss: 0.005017492920160294, Rec_Loss1: 0.0027055738028138876, Rec_loss2
```

Original Image

PSD-AECRNet

Notes

epoch 0
5,000/72,135 RESIDE OTS

PSD-FFANET

PSD-GCANET

PSD-MSBDN

Project Plan

JAN 8 - 11	JAN 12 - 14	JAN 15 - 17	JAN 18 - 19	JAN 20 - 21
Setup Local Python Environment	Study & Get AECR-Net to Work		Testing & Debugging	
Download RESIDE Dataset	Study & Get Principled S2R Dehazing to Work		Data Gathering	
	Modify AECR-Net to work as PSD backbone		Code Clean Up & Documentation	
		Train Model with RESIDE Dataset		Final Report

Thank you!