

# Deep Conpression AutoDecoder via Distillation

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## Abstract

This project constructs a pipeline to get light models with minimal loss via distillation. First, we prune model structure of decoder and arquire light student models. Then, we do distillation training with teacher model [dc-ae-f32c32-in-1.0](#) to reduce the gap as much as possible. During traing, we always freeze the encoder part and project out part of decoder. Furthermore, we involved tricks like AdamW optimizer, CosineAnnealingWarmRestarts Scheduler, Dynamic Loss Weight Adjustment Method, Batch Accumulation and Segment Training. Components of loss function include L1 distillation loss, L1 image loss, LPIPS loss, PatchGAN loss etc. After that, we choose FID, PSNR, SSIM and LPIPS as our evaluation matrice for image quality and MACs/inference time as indicators for speed. Finally, new light models outperform benchmark in PSNR and SSIM, the quality of generated images. Also, there is no significant difference in visualization between the generated image and teacher model.

## Environment Setup

1. In this folder, run the command below to create a new environment named "myenv", or it will create an environment named efficient by default.

```
conda env create -f environment.yml -n myenv
```

2. Notice that the efficientvit package in path efficientvit/applications/dc\_ae/scripts/efficientvit and efficientvit/efficientvit have been modified due to the changes in new model configurations.

## Usage

## Deep Compression AutoDecoder