

Denoising Autoencoder

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Epochs

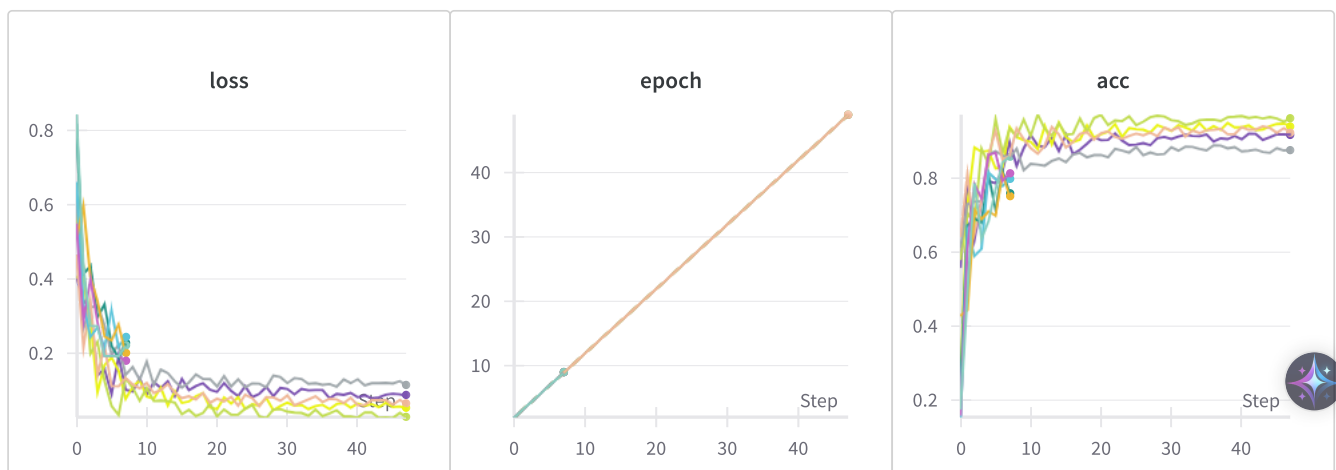
In this report, we compare different runs of our denoising autoencoder, focusing on the impact of increasing the number of epochs and refining our dataset. Initially, we trained the model for 10 epochs, observing a steady decline in loss. However, we hypothesized that training for longer might yield better denoising performance.

We then increased the training duration to 50 epochs, which led to further reductions in loss and an overall improvement in accuracy. The model continued to learn effectively, but the improvements started plateauing, suggesting diminishing returns with additional training. Given this trend, we decided to stop at 50 epochs.

Images

Additionally, we cleaned our dataset to prioritize image quality over quantity. Originally, we had 700 images per class, but after filtering out lower-quality samples, we retained approximately 150 high-quality images per class. This helped improve the model's ability to generalize and denoise images effectively.

Section 1



· Loss Reduction

- The loss graph shows that as training progresses, the loss significantly decreases in the initial epochs and then stabilizes.
- Runs with clean images (purple and yellow lines) follow a similar trend to other runs, but they appear to maintain a slightly lower loss overall, suggesting that better-quality images improve model training.

· Increasing epochs

- The epoch graph confirms that different runs were trained with varying epochs, with some extending to 50 epochs.
- Training for more epochs contributed to further loss reduction, but the improvement became marginal after a certain point. This confirms that stopping at 50 epochs was a reasonable choice.

· Accuracy Improvement

- The accuracy graph shows that accuracy improves rapidly within the first few epochs and then stabilizes.
- Runs with clean images seem to maintain consistently high accuracy, reinforcing the idea that dataset quality plays an important role.
- However, the accuracy curves begin to plateau, suggesting that additional training may not yield significant improvements.

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<https://wandb.ai/perezromomariapaula-iteso/denoising/reports/Denoising-Autoencoder--VmlldzoxMTkxNTI1NQ>

