

Appendix

A Tangent Plots

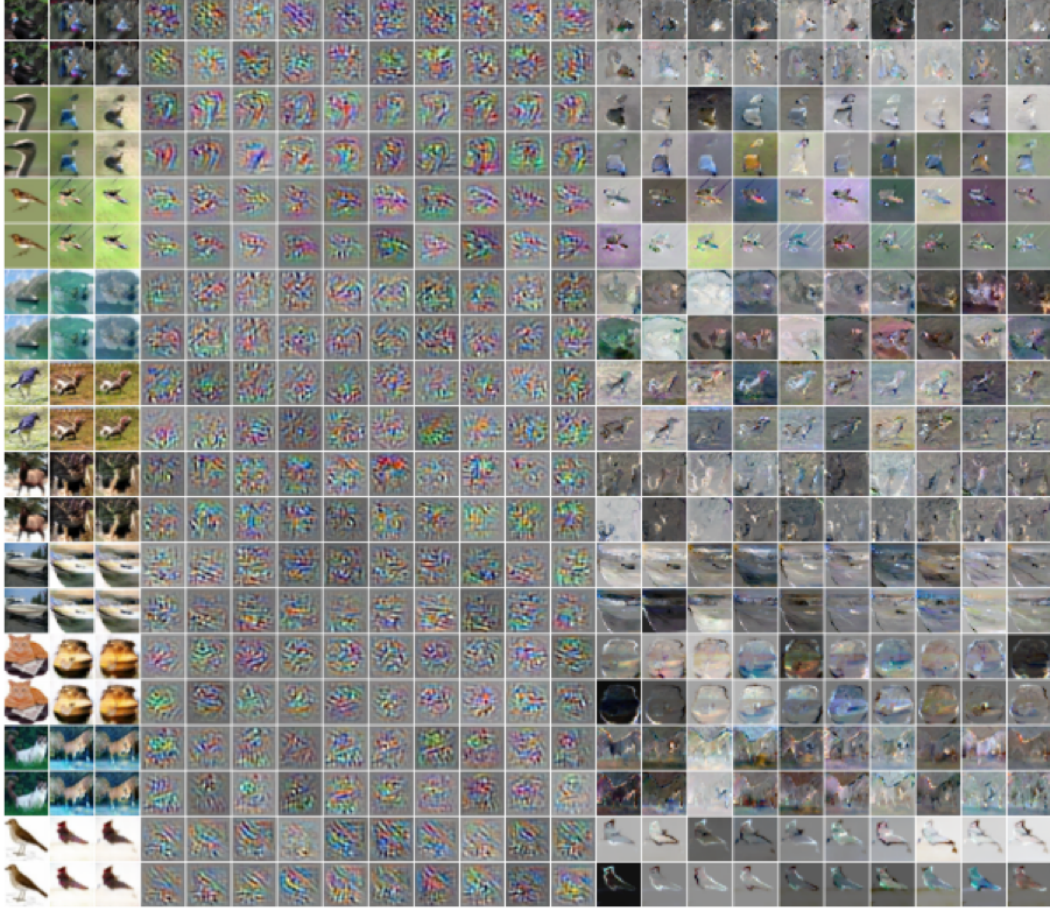


Figure 4: CIFAR10 tangents. *Odd rows*: Tangents using our method for estimating the dominant tangent space. *Even rows*: Tangents using SVD on $J_{h(x)}g$ and J_xh . *First column*: Original image. *Second column*: Reconstructed image using $g \circ h$. *Third column*: Reconstructed image using $g \circ \bar{p} \circ p \circ h$. *Columns 4-13*: Tangents using encoder. *Columns 14-23*: Tangents using generator.



Figure 5: SVHN tangents. *Odd rows*: Tangents using our method for estimating the dominant tangent space. *Even rows*: Tangents using SVD on $J_{h(x)}g$ and J_xh . *First column*: Original image. *Second column*: Reconstructed image using $g \circ h$. *Third column*: Reconstructed image using $g \circ \bar{p} \circ p \circ h$. *Columns 4-13*: Tangents using encoder. *Columns 14-23*: Tangents using generator.

B Reconstruction Plots



Figure 6: CIFAR10 reconstructions: Comparing BiGAN reconstructions with Augmented-BiGAN reconstructions. For $i = 0, 1, \dots, 4$, $(3i + 1)$ th row shows the original images, followed by BiGAN reconstructions in the $(3i + 2)$ 'th row, and the Augmented-BiGAN reconstructions in the $(3i + 3)$ 'th row. Reconstructions shown for total 100 randomly sampled images from the test set ($10 \times 5 = 50$ images each in the left and right column) from the test set.



Figure 7: SVHN reconstructions: Comparing BiGAN reconstructions with Augmented-BiGAN reconstructions. For $i = 0, 1, \dots, 4$, $(3i + 1)$ th row shows the original images, followed by BiGAN reconstructions in the $(3i + 2)$ 'th row, and the Augmented-BiGAN reconstructions in the $(3i + 3)$ 'th row. Reconstructions shown for total 100 randomly sampled images from the test set ($10 \times 5 = 50$ images each in the left and right column).