

WINGED HORSES WITH AN AUTOENCODER

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ABSTRACT

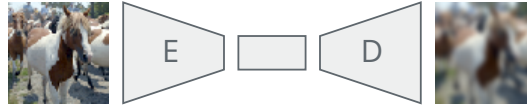
This paper proposes using an autoencoder to generate images that look like a Pegasus. This abstract should be short and concise, about 8-10 lines long.

1 METHODOLOGY

The method is to train an autoencoder [1], by minimising the squared L2 loss:

$$\mathcal{L}_{\text{AE}} = \mathbb{E}_{\mathbf{x} \sim p_{\text{data}}} [\|\mathbf{x} - D(E(\mathbf{x}))\|^2] \quad (1)$$

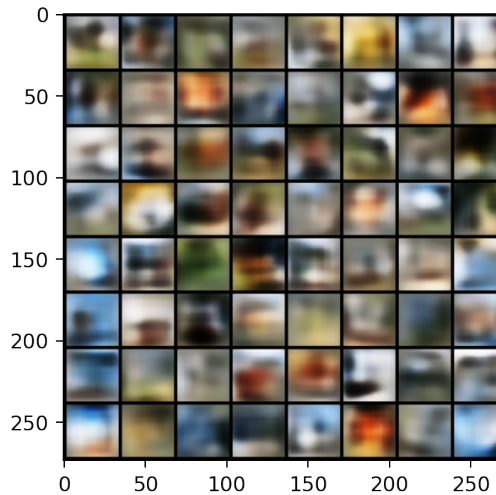
The methodology should be very concise and the mathematical notation should try to follow the ICLR conference guidelines [\[1\]](#). If you are not familiar with \LaTeX , you can use this online \LaTeX equation editor [\[2\]](#). You may want to include an architectural diagram:



The architectural diagram above was created using Inkscape and exported to a PDF. This was then uploaded to the figures directory on the left.

2 RESULTS

The results look very blurry, where the best batch of images looks like this:



From this batch, the most Pegasus-like image (with quite a stretch of the imagination) is:



3 LIMITATIONS

It's very difficult to see anything that looks like a Pegasus. In the future, this could be improved by training for more than 10 epochs, although this was not possible due to the time constraints.

BONUSES

This submission has a total bonus of -4 marks (a penalty), as it is trained only on CIFAR-10, and the Pegasus has a dark body colour.

REFERENCES

- [1] Mark A Kramer. "Nonlinear principal component analysis using autoassociative neural networks". In: *AIChE journal* 37.2 (1991), pp. 233–243.