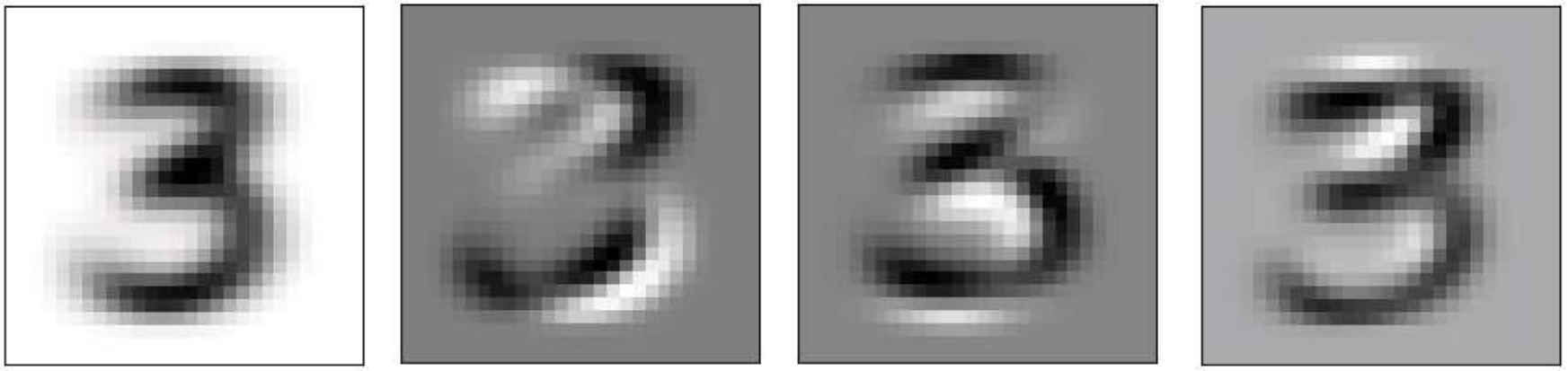
Application to the MNIST dataset (just the 3's)

https://en.wikipedia.org/wiki/MNIST_database#/media/File:MnistExamples.png

$\mathbb{R}^{D \times D} = \mathbb{R}^{28 \times 28}$

Mean and eigenvectors:

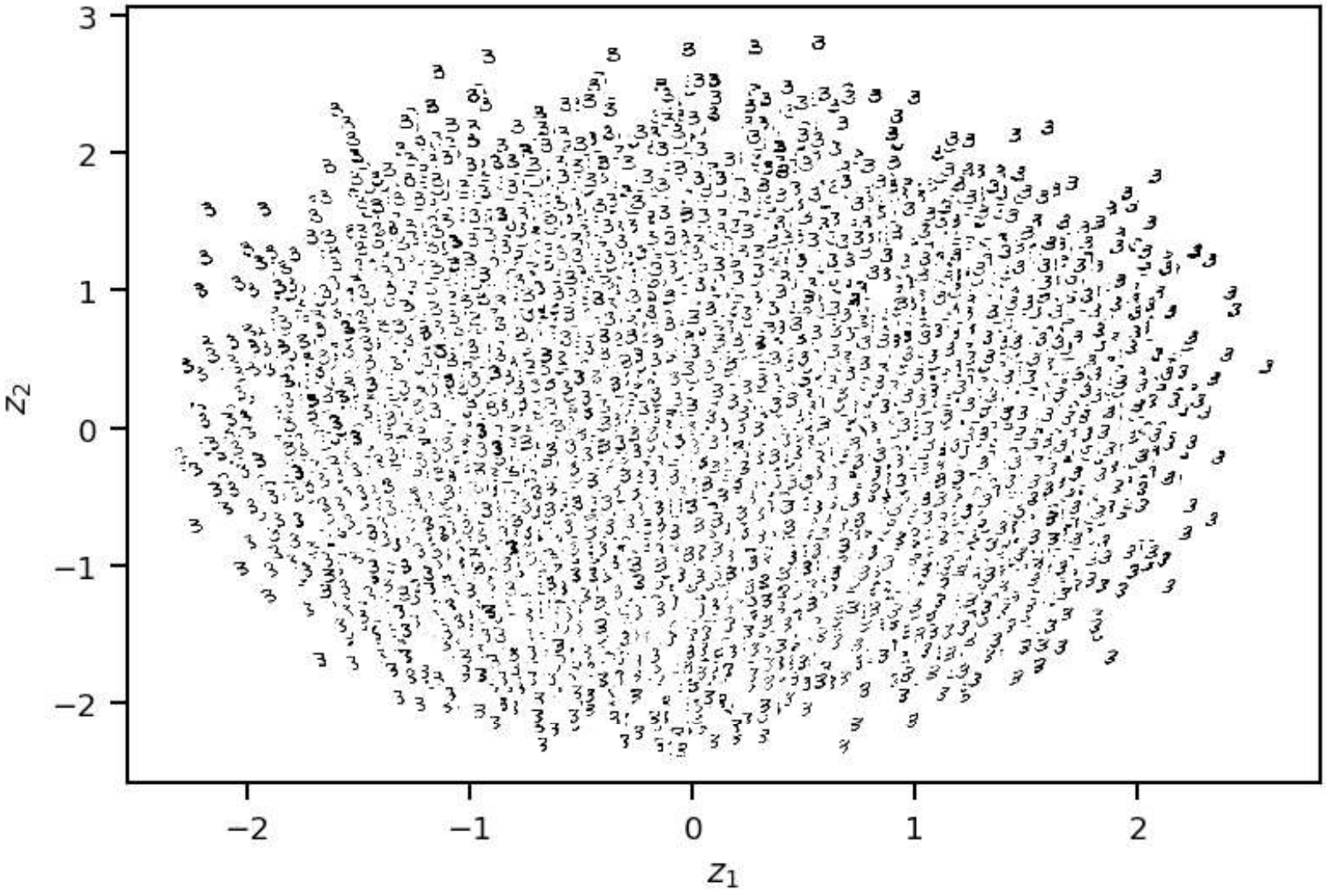


$\bar{\mathbf{x}}$ $\mathbf{w}_1$ $\mathbf{w}_2$ $\mathbf{w}_3$ ...

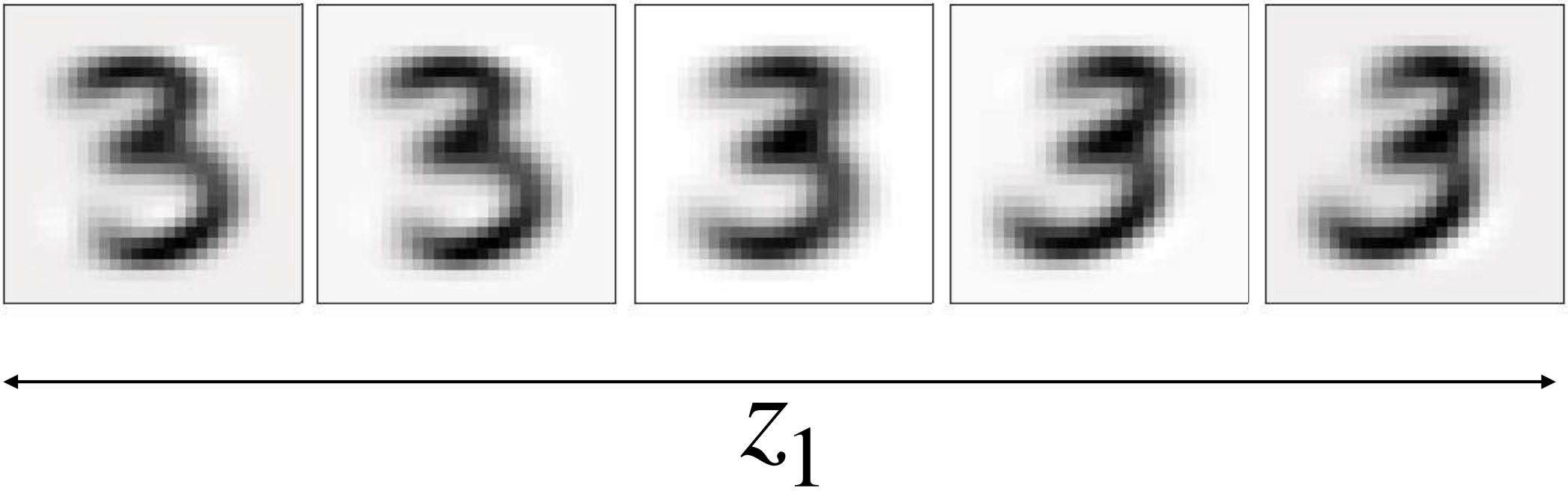
offset

correspond to orthonal directions

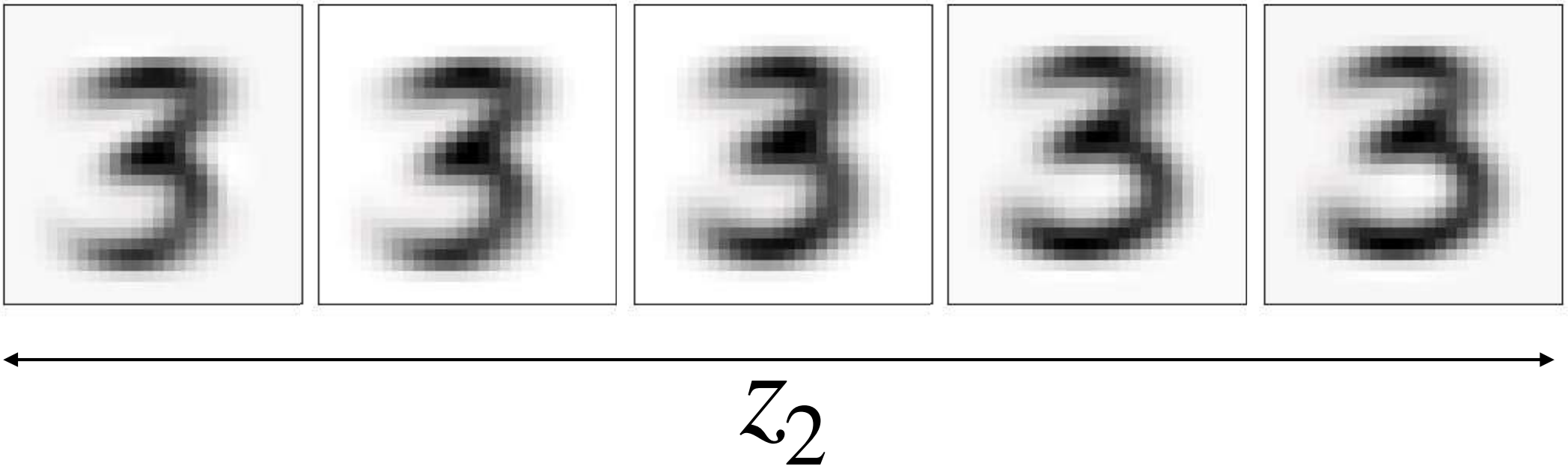
Projection of the data in two dimensions (1 and 2)



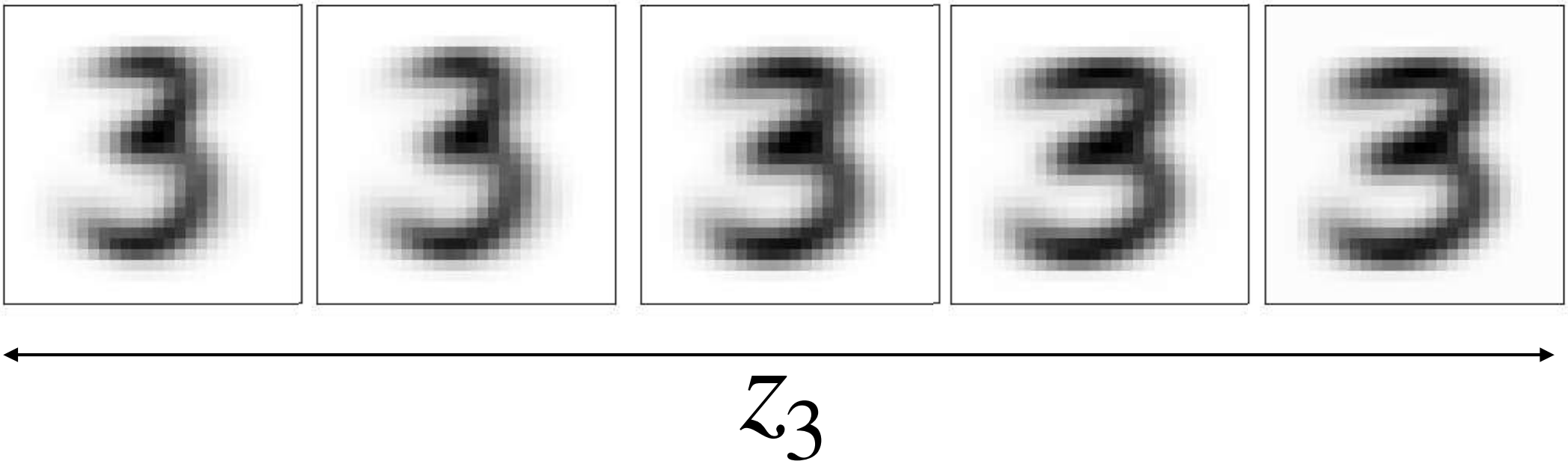
What happens when you only change z_1



What happens when you only change z_2



What happens when you only change z_3



directions capture certain features of the higher dimensional data ☆

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