# Neural Networks

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# What are neural networks?

During optimisation we talked about a model $p_\theta(z \mid x)$.

How do we make this model? We saw an example model before:

$$\hat{f}_\theta(x) = \theta_0 + \theta_1 x$$

This is a linear function, which does not approximate each data set!

A more general case:

$$\hat{f}_\theta(x) = \theta_0 + \sum_i \theta_i s(x)$$

where $s(x)$ is a *basis function*. For instance, $s(x) = \exp(-x^2)$.

- overfitting