

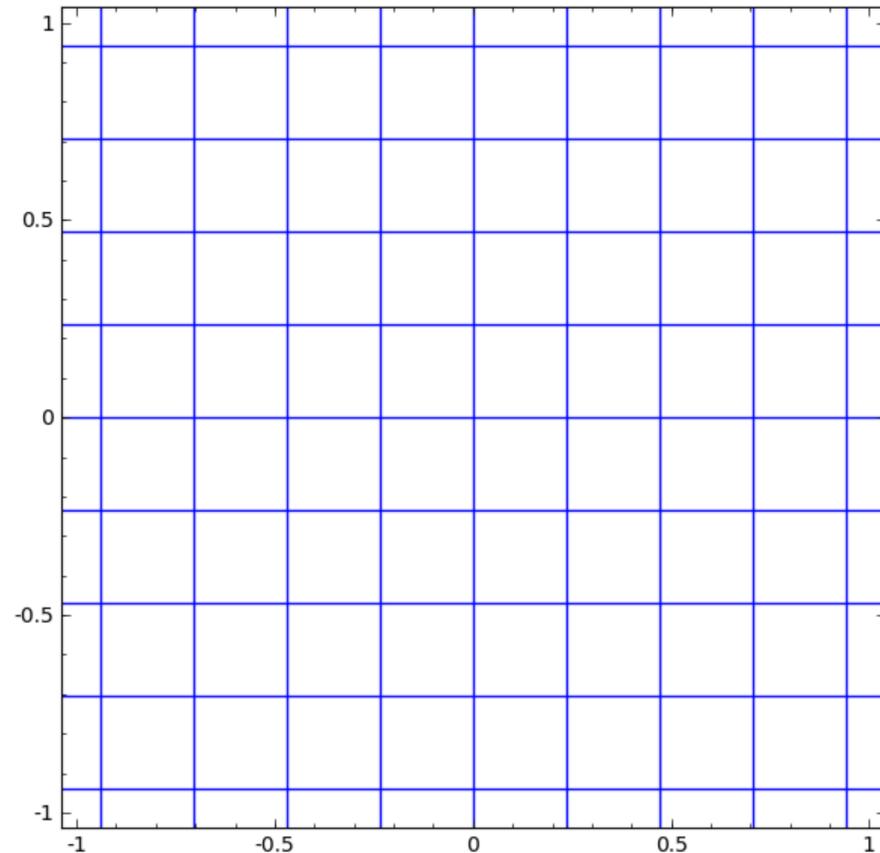
Neural Networks

$$\mathbf{z} = g(V f(\mathbf{x}) + \mathbf{b})$$

Nonlinear transformation Warp space Shift

$$y_{\text{pred}} = \operatorname{argmax}_y \mathbf{w}_y^\top \mathbf{z}$$

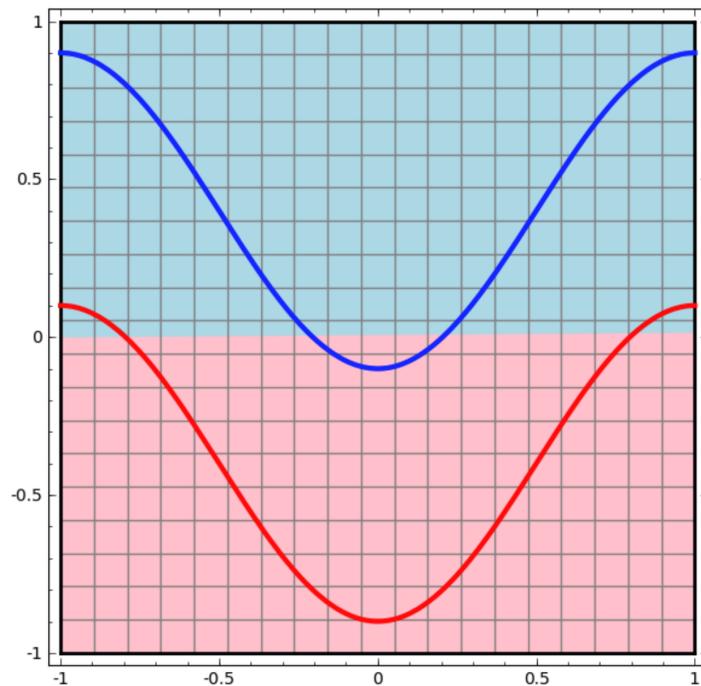
- Ignore shift / $+\mathbf{b}$ term for the rest of the course



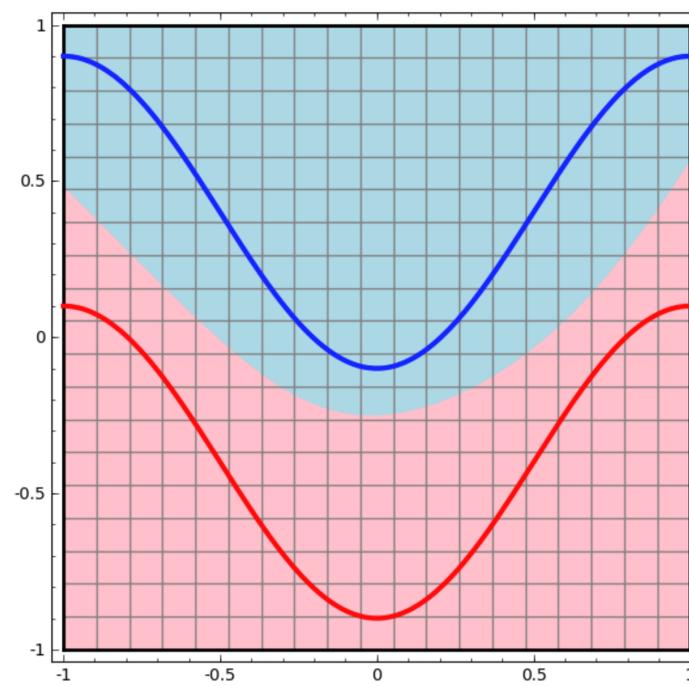
Taken from <http://colah.github.io/posts/2014-03-NN-Manifolds-Topology/>

Neural Networks

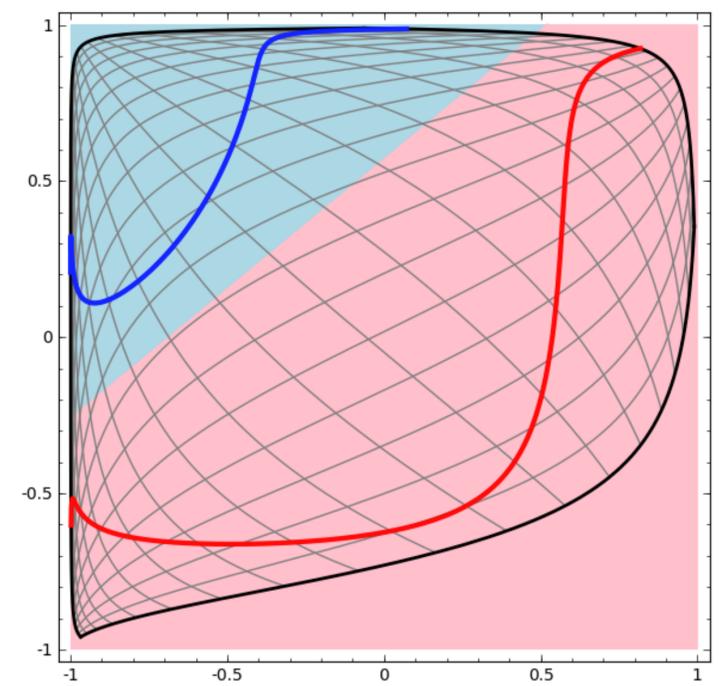
Linear classifier



Neural network



Linear classification
in the transformed
space!



Taken from <http://colah.github.io/posts/2014-03-NN-Manifolds-Topology/>

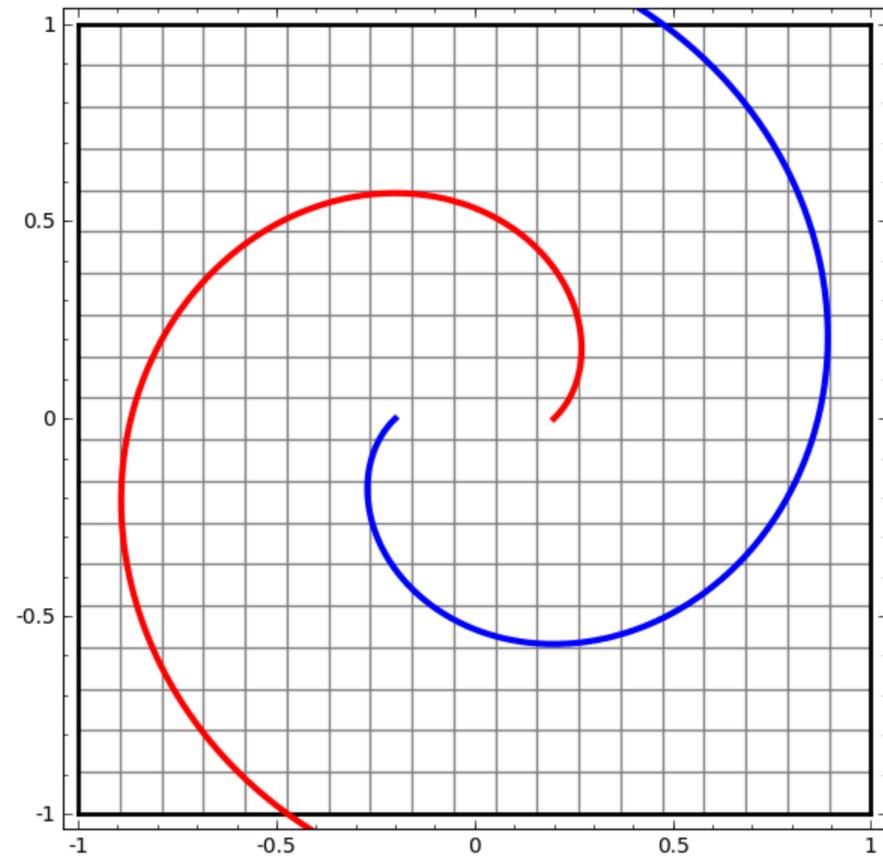
Deep Neural Networks

$$\mathbf{z}_1 = g(V_1 f(\mathbf{x}))$$

$$\mathbf{z}_2 = g(V_2 \mathbf{z}_1)$$

...

$$y_{\text{pred}} = \operatorname{argmax}_y \mathbf{w}_y^\top \mathbf{z}_n$$



Taken from <http://colah.github.io/posts/2014-03-NN-Manifolds-Topology/>