

Quiz 2

02 Perceptrons

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Treat this as an exam situation. You will be given 5 minutes to complete this quiz.

1 L2 Norm

Prove that the L2 norm is unitary invariant. In other words, the L2 norm of a vector does not change even after multiplying by some orthogonal matrix U .

2 Distance to Hyperplane

For a point $x_i \in \mathbb{R}^d$, prove that the distance to a hyperplane $H = \{x : w^T x + \alpha\}$ is

$$\frac{1}{\|w\|_2} (w^T x_i + \alpha)$$