The Polynomial Kernel

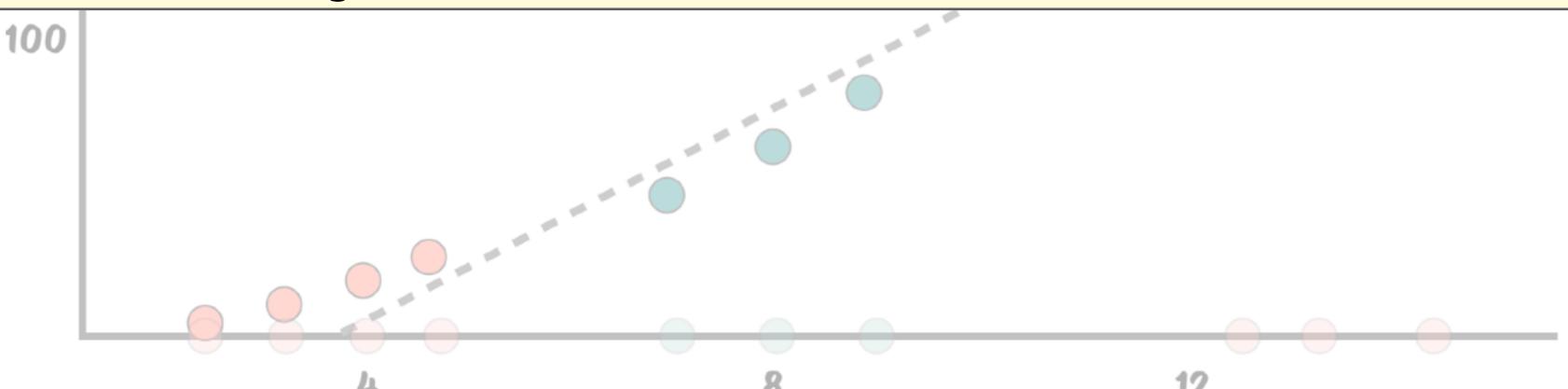
A function that computes the relationship between vectors in multiple dimensions (without actually having to calculate the coordinates for those dimensions)

example:
$$a = 4, b = 8$$

plug values into the Kernel to get the high-dimensional relationship

$$(a \cdot b + \frac{1}{2})^2 = (16 \cdot 64 \cdot \frac{1}{2}) = 512$$

one of the 2-dimensional relationships we need to solve for the SV classifier (even though we did not transform the data into 2 dimensions)



The Radial Kernel (RBF)

The Radial Kernel

$$K(a,b) = e^{-\gamma}(a-b)^2$$

projects to infinite dimensional space works similar to nearest neighbors classifier