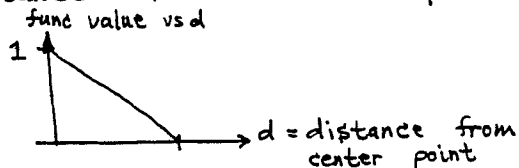


Neil E Cotton

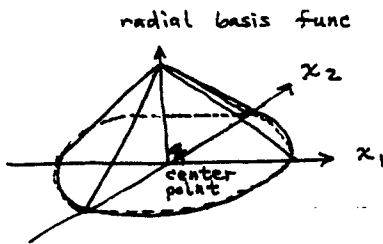
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A radial basis function is one whose value depends on the distance from a center point.

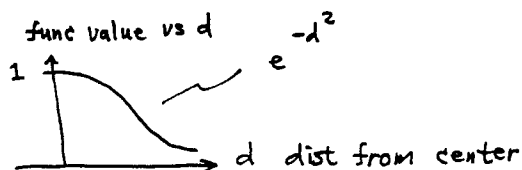
ex: Triangular radial basis function



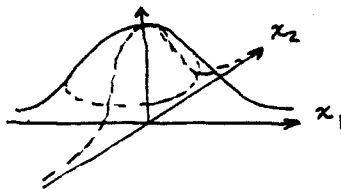
For two inputs we rotate the distance func about the center point to get a cone.



ex: Gaussian radial basis function

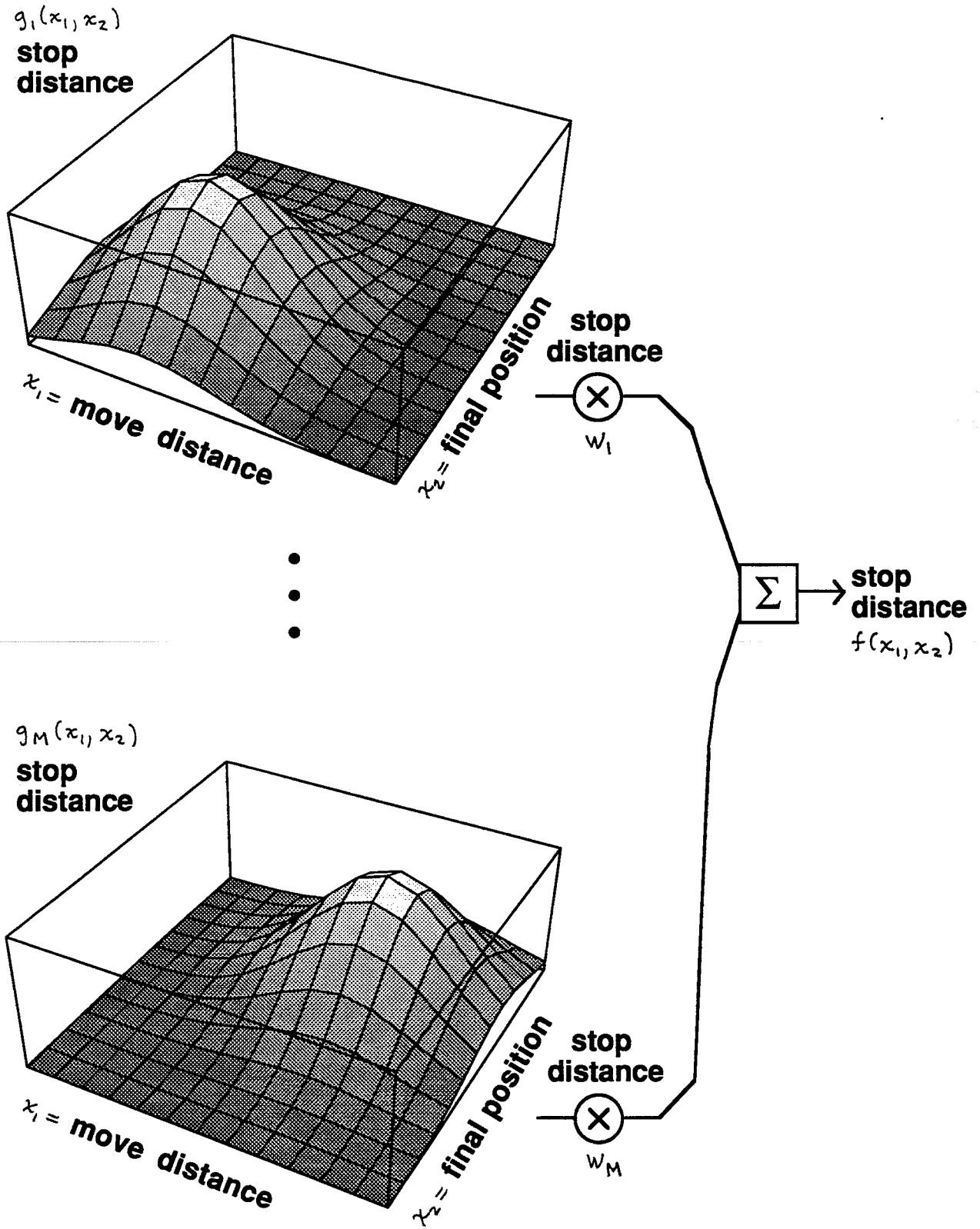


For two inputs we get a 2-dim circularly symmetric gaussian.

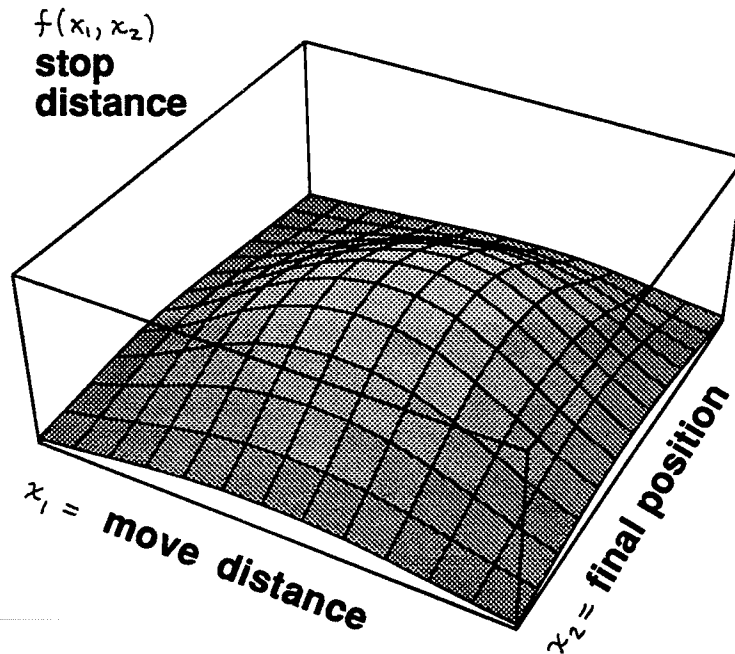


Typically, the radial basis functions are placed at regularly spaced grid points.

RADIAL BASIS FUNCTIONS (cont.)



RADIAL BASIS FUNCTIONS (cont.)



note: this surface is the sum of four gaussian-shaped radial basis functions located at $(\frac{1}{3}, \frac{1}{3})$, $(\frac{1}{3}, \frac{2}{3})$, $(\frac{2}{3}, \frac{1}{3})$, $(\frac{2}{3}, \frac{2}{3})$. The peak, however, is located at $(\frac{1}{2}, \frac{1}{2})$. Unexpected peaks such as this are a drawback to using radial basis functions, especially in higher dimensions.