Cosine similarity is a measure of similarity between two vectors that calculates the cosine of the angle between them. It is a value between -1 and 1, where:

- **1** means the vectors are identical.

- **0** means the vectors are orthogonal (no similarity).

- **-1** means the vectors are diametrically opposite.

In essence, cosine similarity helps determine how similar two vectors are, regardless of their magnitude, by focusing on their direction. It is commonly used in text analysis to compare the similarity between documents or sentences.

The Formula for cosine similarity between two vectors A and B is:

**Cosine similarity =**

where:

* A.B is the dot product of the vectors A and B
* ||A|| is the magnitude (or norm) of vector A, calculated as ||A|| = 2i
* ||B|| is the magnitude (or norm) of vector B, calculated as ||B|| = 2i

The dot product of A.B is calculated as A.B = iBi