**Embeddings And Their Role In Generative AI**

Embeddings are a way of translating text , images, code into vectors, which are just lists of numbers. These vectors capture the meaning or context of the input. The closer two vectors are, the more similar their meaning.

**Example:**

* The words "king" and "queen" will have vectors that are close together because they are related in meaning.
* "Apple" (the fruit) and "banana" will also be close.
* But "apple" (the fruit) and "laptop" will be farther apart — unless "apple" is used in a tech context. That's the magic: the model understands context too.

Why are embeddings important in Generative AI?

* Let’s say you're building a chatbot or a smart search engine:
* When a user asks a question, embeddings help the system understand what the user means.
* Then it finds the most relevant information not by matching exact words, but by comparing meaning.
* This is crucial when generating answers that feel natural and intelligent.

Imagine you're organizing a huge library, but instead of sorting books by titles or authors, you're placing them based on their meaning. For example, books about space, planets, and rockets would be close together on the same shelf even if they don't share the exact same words. This is what embeddings do in Generative AI.