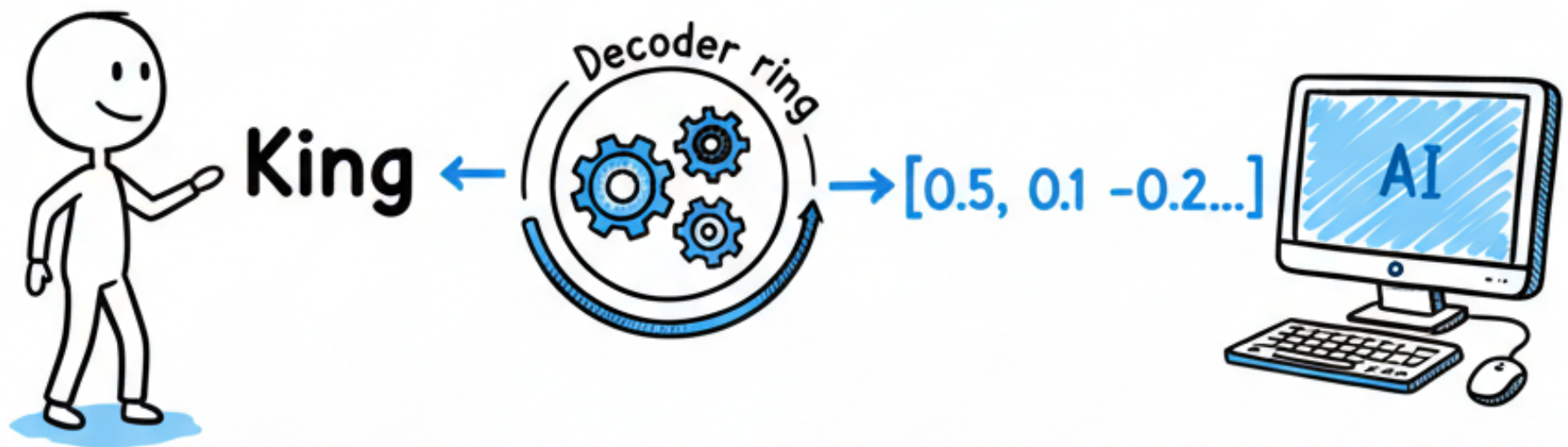


GENERATIVE AI SERIES: DAY 15

The AI's Secret Language: Vector Embeddings

How does AI actually understand the meaning of words? Lets decode it! 🤔

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Computers Understand Numbers, Not Words

AI can't work with text directly. To an AI, "Hyderabad" and "Biriyani" are just letters. It can't know they are related.

The Goal: We need a way to turn words, sentences, and even images into numbers that capture their meaning and context.

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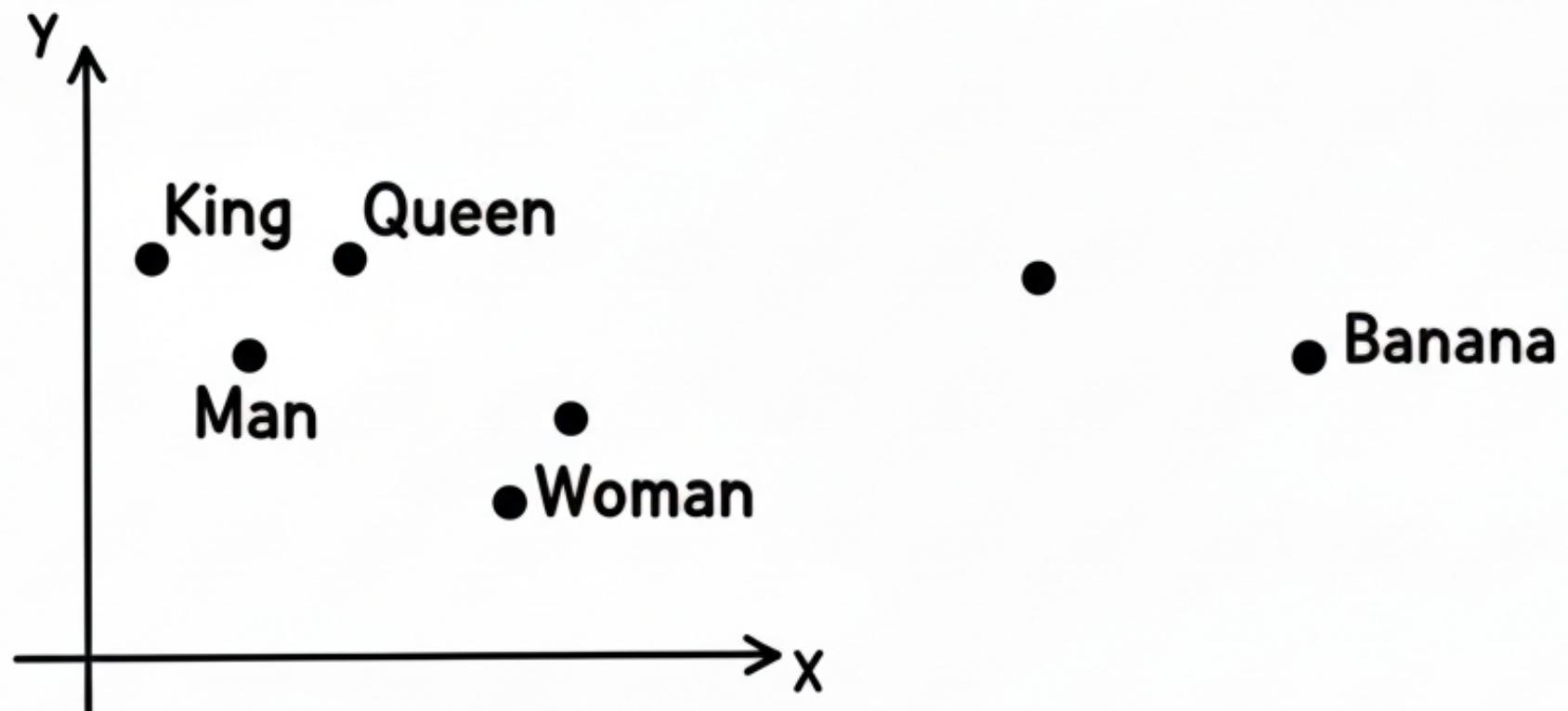
Vector Embeddings: The Meaning Map

An embedding is process that converts complex data (like text) into a list of numbers, called the vector.

Meaning Map

The Magic: This vector represents the data's position in the 
'Concepts with similar meanings are placed close together on this map.'

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The Translation Process

A special AI model (an "embedding model") is trained on massive amounts of text to learn the relationships between words. You input your text "A happy dog)). The model processes it. It outputs a vector (a list of numbers like $[0.8, -0.3, 0.9\dots]$) numerically represents meaning of "a happy dog."

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The Power of *Proximity*: Semantic Search

This is why modern search is so good!

Old Search (Keywords): You search "car", you only get results with car." the AI converts "*car*", to a vector. It then finds other vectors that close by, like "vehicle", and even "sedan"

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GENERATIVE AI SERIES: DAY 15

Connecting It Back to RAG!

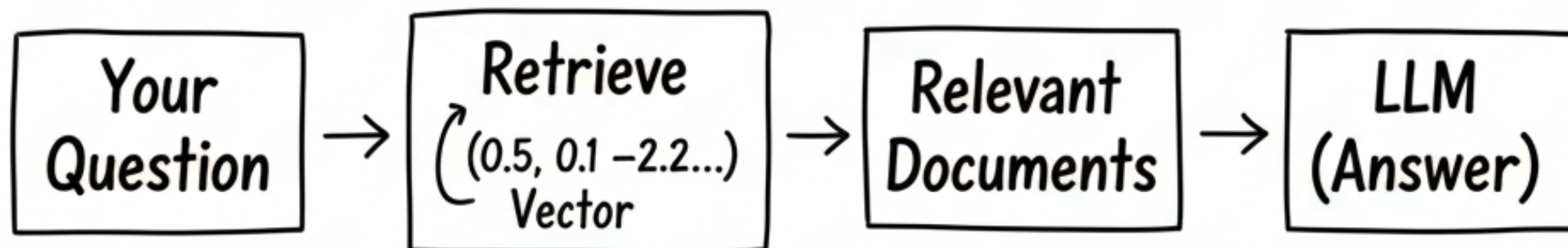
Now you know how the 'Retriever' in RAG works (from 14!)

Your question is converted into vector Day 14).

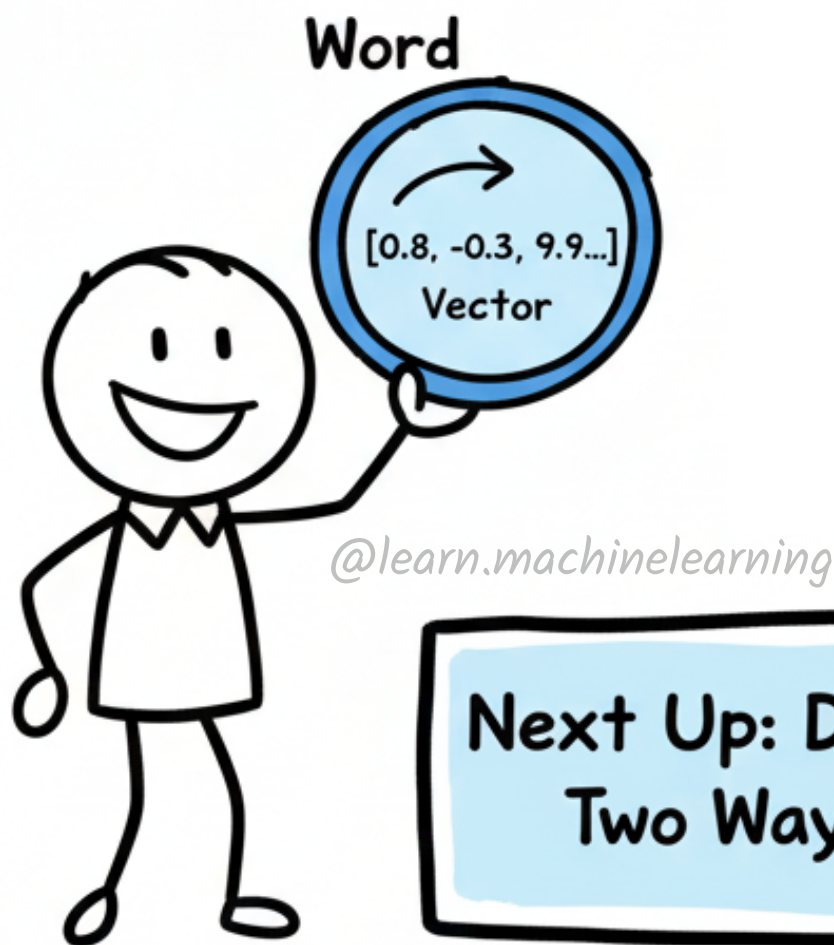
A special Vector Database finds the documents with the closest vectors to your question's vector.

These are the most relevant documents to send to LLM!

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Day 15 Takeaway: Vectors are the Language of AI Meaning



Vector embeddings are the fundamental technique for translating human concepts into a mathematical format that AI can understand, enabling powerful semantic search and making systems like RAG possible.

**Next Up: Day 16: Fine-Tuning vs. RAG -
Two Ways to Customize Your AI!**



This was a bit technical! Did the "meaning map" analogy help? Let know! ↓

Follow @learn.machinelearning for the full series!

SAVE this to remember the magic behind modern AI search!