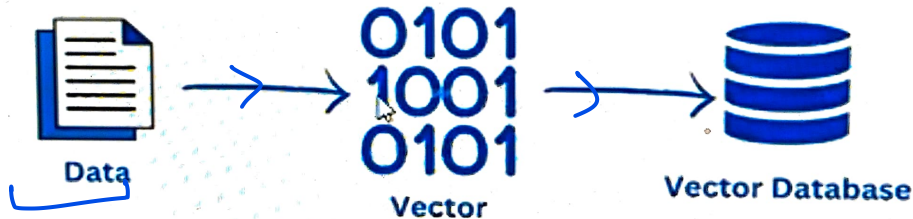


Relational Databases
SQL Server, PostgreSQL
MySQL, SQLite

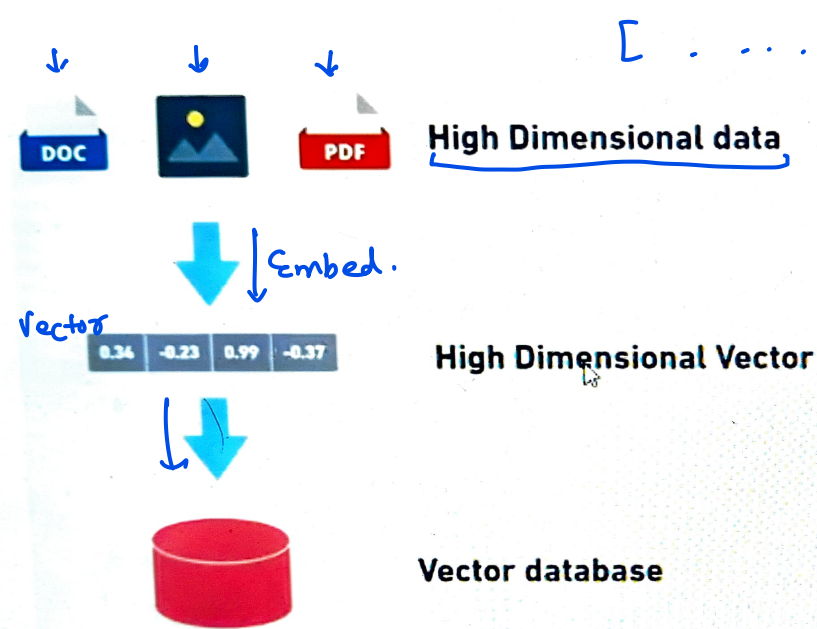
NoSQL
MongoDB, DynamoDB

Vector Databases

Specialized
Database
to
Store
Vectors.



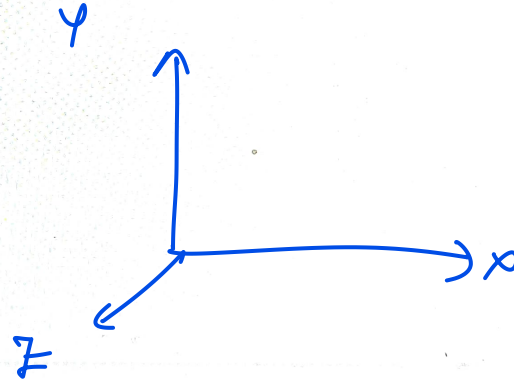
Vector Database



[.....]

thousand to length by.

A vector database is a database used for storing high-dimensional vectors such as word embeddings or image embeddings.



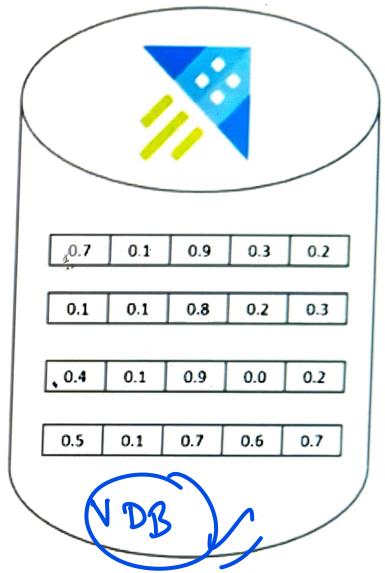
24

word2vec Model
Text IN \rightarrow Vector OUT



vectors

0.7	0.1	0.9	0.3	0.2
0.1	0.1	0.8	0.2	0.3
0.4	0.1	0.9	0.0	0.2
0.5	0.1	0.7	0.6	0.7



Text

Embedding Model

Vector Embeddings

ADX for vector storage + similarity search

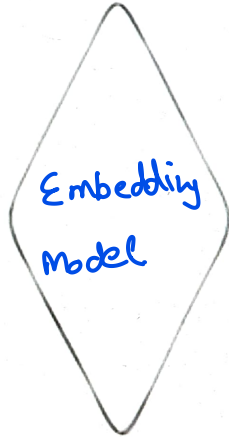
ADX as a Vector database

ε

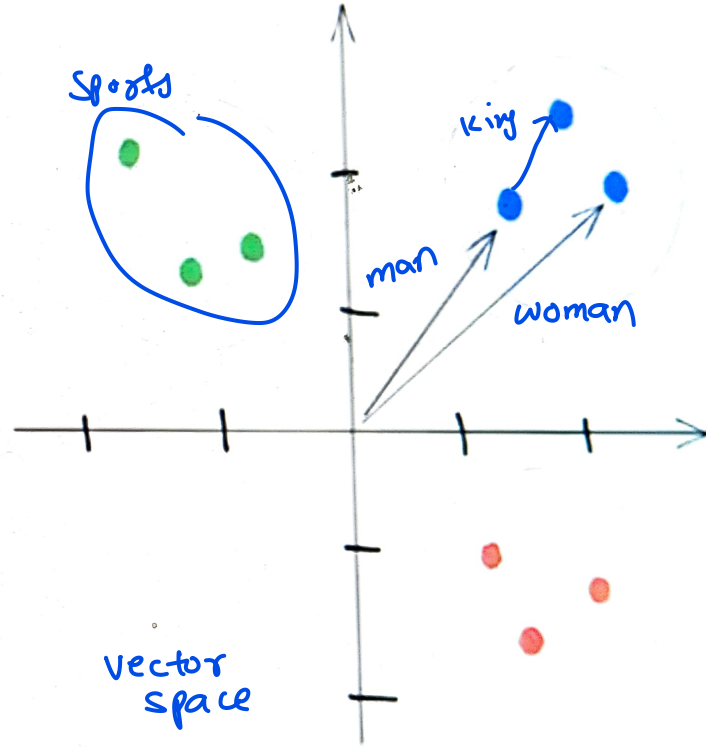
ε

vector embeddings (2D example)

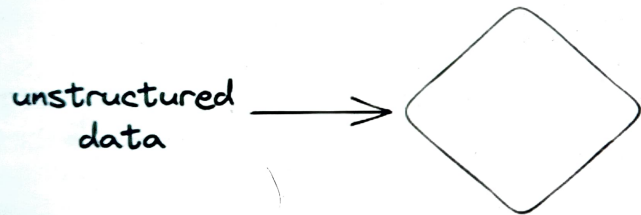
king -
man -
woman -
apple -
banana -
orange -
football -
golf -
tennis -



- [4 5]
- [3 3.5]
- [5 3]
- [2.5 -2]
- [2.5 -3]
- [4 -2.5]
- [-3 4]
- [-1.5 3]
- [-2 2]



SQL Database Indexing
Quick Retrieval
→ BTree



Index embeddings

[]	[0.4 0.7 0.9 0.1 0.5 ...]
[]	[0.2 0.3 0.8 0.7 0.3 ...]
[]	[0.1 0.6 0.4 0.3 0.2 ...]
	...
	...
	...
[]	[0.7 0.3 0.2 0.1 0.9 ...]

↑
vector DB Indexes



Data



Traditional
Database

A vector database indexes and store vector embeddings for faster retrieval and similarity search.



Data



0101
1001
0101

Vector

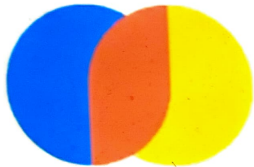


Vector Database

Some widely used Vector DB

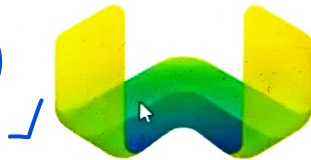
Facebook AI Similarity Search
= FAISS

①



Chroma ^{DB}

②



Weaviate

③

FAISS ^{library}
Scalable Search With Facebook AI



Pinecone



redis