

# LLM Engineering

## MASTER AI & LARGE LANGUAGE MODELS



# The Vector Datastore

## What you can now do

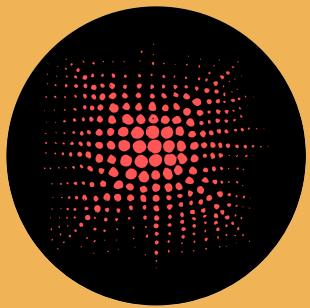
- Generate text and code with Frontier Models including AI Assistants with Tools, and with open-source models with HuggingFace transformers
- Confidently choose the right LLM for your project, backed by metrics
- Explain how RAG uses vector embeddings and vector datastores to add context to prompts, define LangChain and read / split Documents

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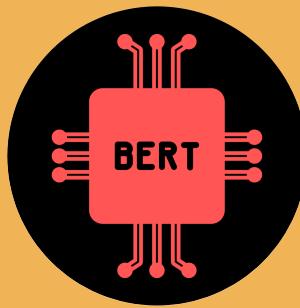
## After today, you'll be able to

- Convert our chunks of text into Vectors using OpenAIEmbeddings
- Store the Vectors in Chroma, one of the most popular open-source Vector datastores
- Visualize and explore Vectors in a Chroma Vector Datastore in 2D and 3D

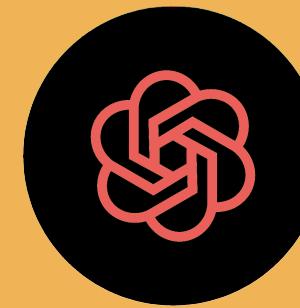
# Vector embedding models



word2vec (2013)



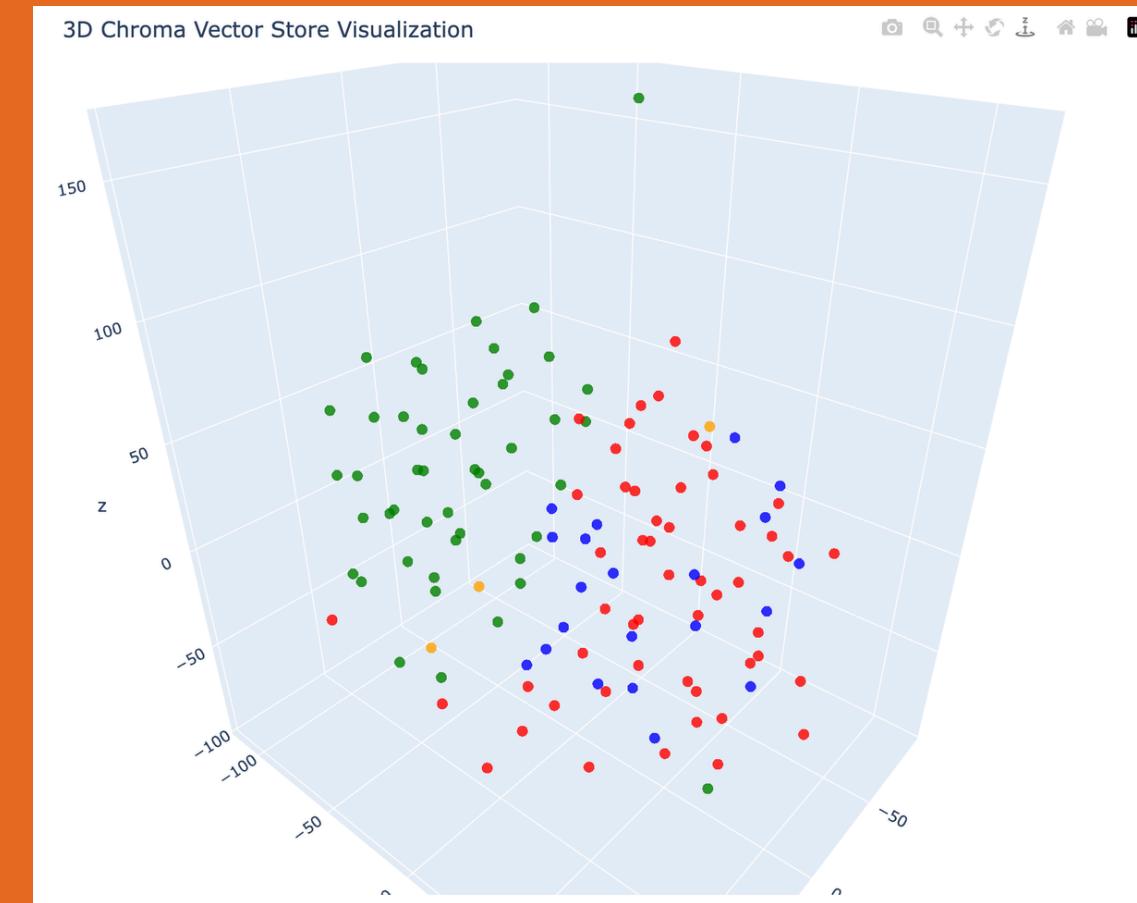
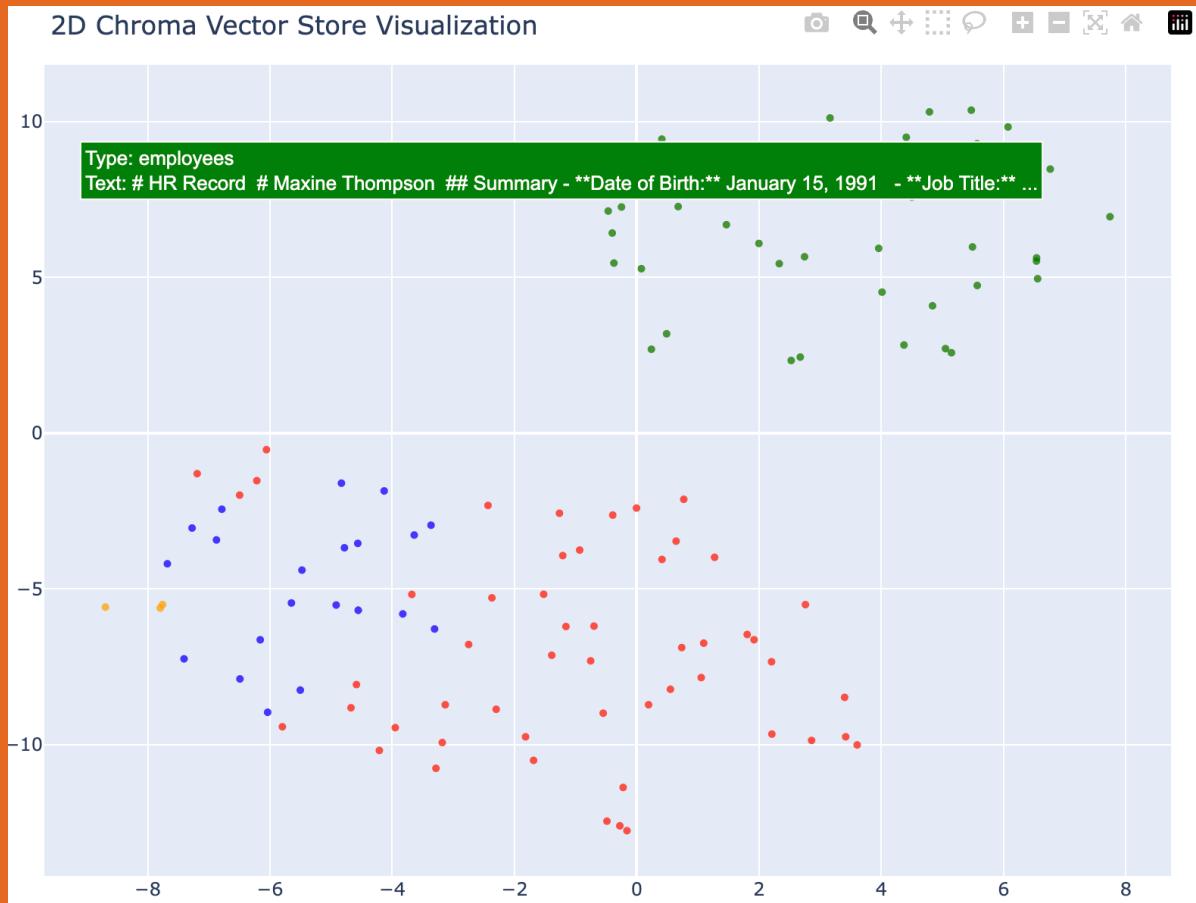
BERT (2018)



OpenAI Embeddings (2024 updates)

# Introducing Chroma

# VISUALIZING Chroma



# This is where LangChain shines

**Create the Chroma  
datastore and populate  
with Vector Embeddings  
of our Knowledge Base**

*..In 2 lines of code.*

```
# Use OpenAI Embeddings model
embeddings = OpenAIEmbeddings()

# Create vectorstore

vectorstore = Chroma.from_documents(
    documents=chunks,
    embedding=embeddings,
    persist_directory=db_name
)
```

A stylized illustration of a person walking away from the viewer down a path towards a vast, colorful landscape with mountains and a horizon line.

## PROGRESS

# RAG time!

### **What you can now do**

- Generate text and code with Frontier Models including AI Assistants with Tools, and with open-source models with HuggingFace transformers
  - Confidently choose the right LLM for your project, backed by metrics
  - Create and populate a Vector Datastore with the contents of a Knowledge Base
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### **After the next session, you'll be able to**

- Create a Conversation Chain in LangChain for a chat conversation with retrieval
- Ask questions and receive answers demonstrating expert knowledge
- Build a Knowledge Worker assistant with chat UI