

# All About Large Language Models (LLMs)

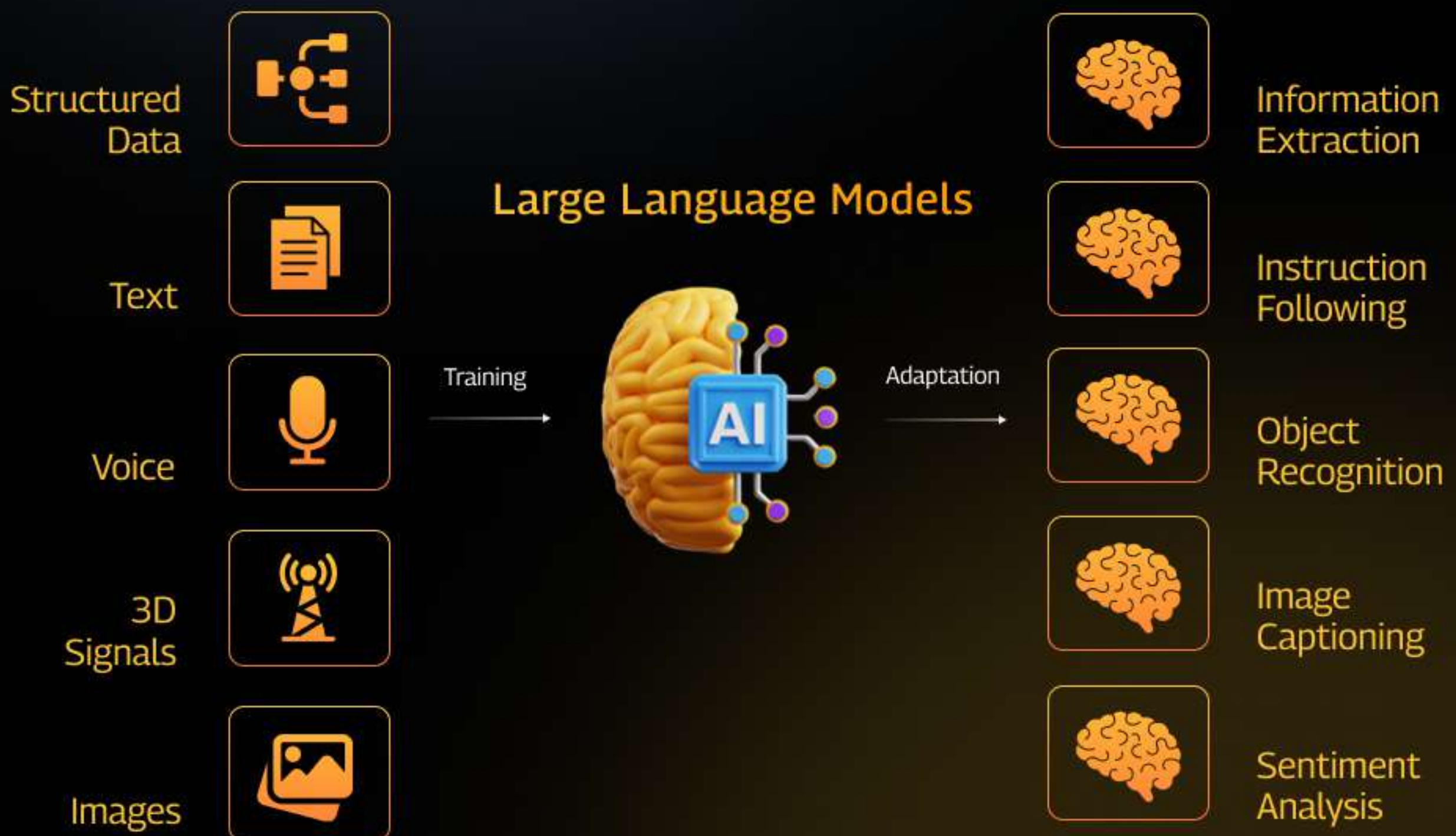
A Detailed Guide





# What are LLMs ?

A large language model (LLM) is a type of artificial intelligence (AI) algorithm that can recognize and generate text, among other tasks. LLMs are built on Machine Learning Models





# Role of LLM in Data Science and Analytics

**Sentiment Analysis:** Understand customer opinions to improve products and services

**Named Entity Recognition (NER):** Identify key entities in text for better data extraction

**Text Generation and Summarization:** Create relevant text and concise summaries quickly

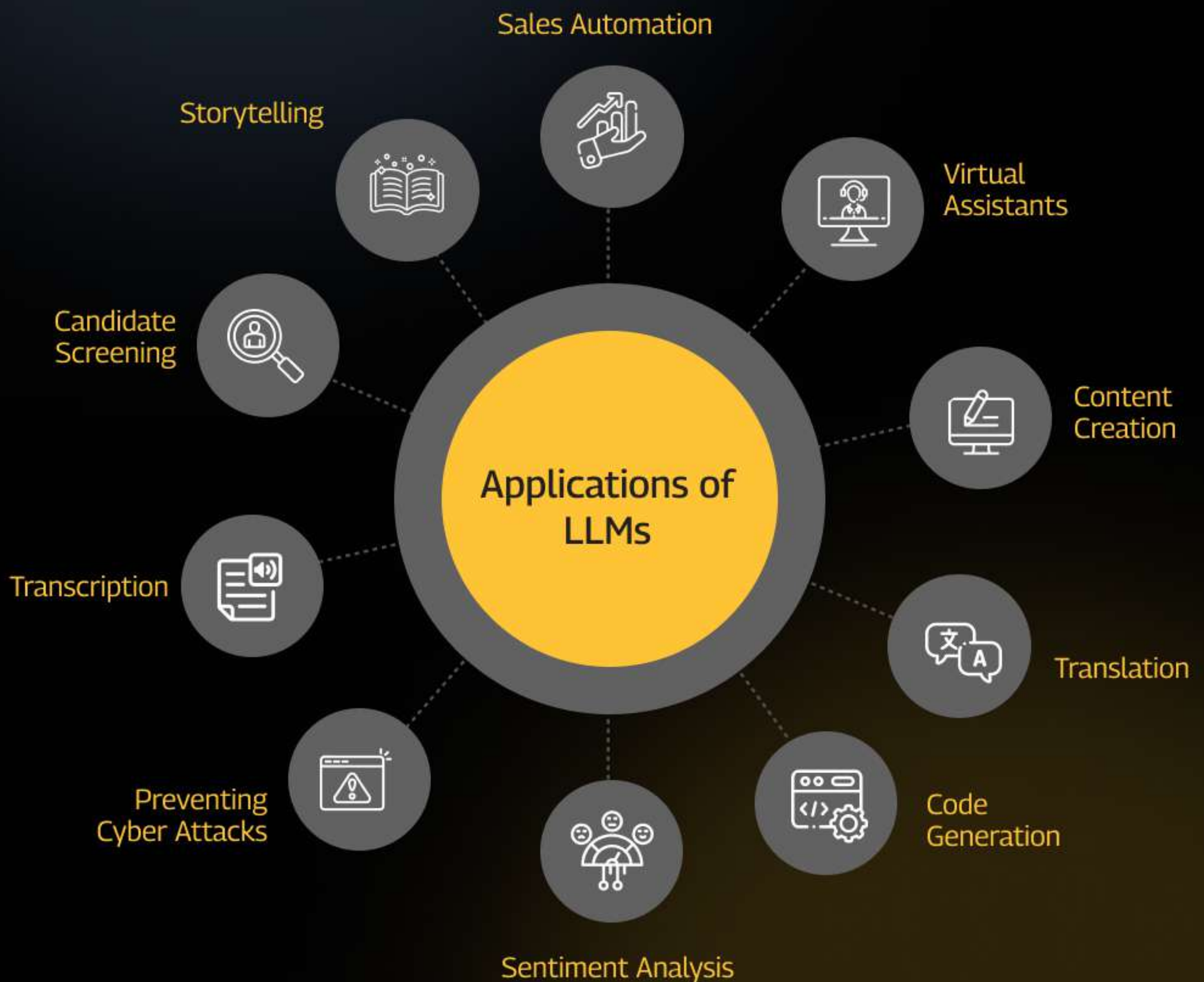
**Natural Language Understanding (NLU):** Decode subtle meanings in human communication

**Data Engineering:** Enhance data processing and management for accurate analysis

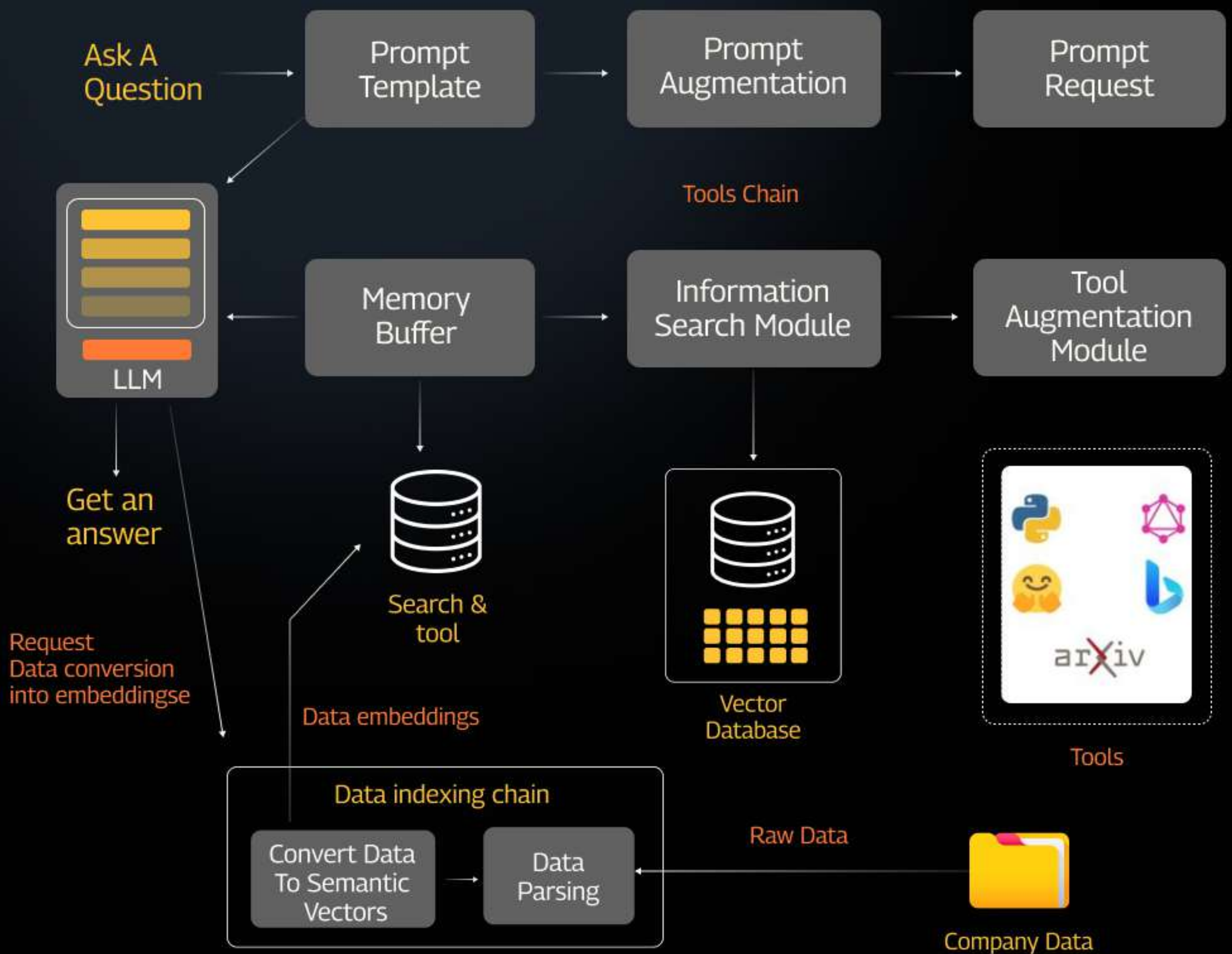




# Real-world Applications of LLMs



# How to build Applications with LLM?





# Important Terms to know about LLM

**Transformers:** Self-attention mechanism for understanding word relationships in sentences

**Token:** Basic units of text processed by an LLM, such as words or sub-words

**Chunking:** Breaking text into smaller segments for easier analysis

**Indexing:** Cataloguing datasets for efficient retrieval

**Embedding:** Numerical representation of words to understand relationships

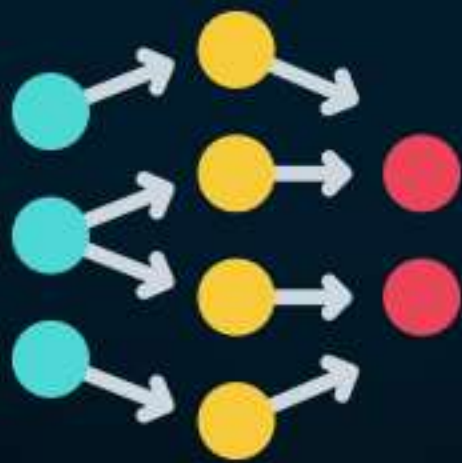




## Open-Source LLMs

VS

## Closed-Source LLMs



Lower initial cost but possibly higher maintenance

Collaborative and fast innovation from a global community

Reliant on community-based support, which is extensive but inconsistent

Highly customizable with access to the source code

Shared IP under open-source licenses

Higher initial cost but lower maintenance

Slower innovation directed by a single entity

Consistent and quality support offered through dedicated channels

Customization possible within the platform's limits

IP is closely held, providing competitive advantage



# Benefits of Open-Source LLMs

## **Cost Effectiveness**

Open-source LLMs eliminate licensing fees, making high-end tech accessible at lower costs



## **Data Ownership and Control**

You set data handling rules, ensuring compliance and safeguarding against unauthorized access



## **Avoiding Vendor Lock-In**

Freedom to modify and integrate systems prevents dependency on any single



## **Security and Privacy**

Community scrutiny of open-source code leads to faster identification and patching of security gaps



## **Customization and Specialization**

Adapt and evolve the technology freely to meet unique organizational requirements without constraints



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## Benefits of Large Language Models (LLMs)

**Improved Customer Service:** Self-attention mechanism for understanding word relationships in sentences

**Faster Content Creation:** They can quickly generate articles, reports, and marketing materials.

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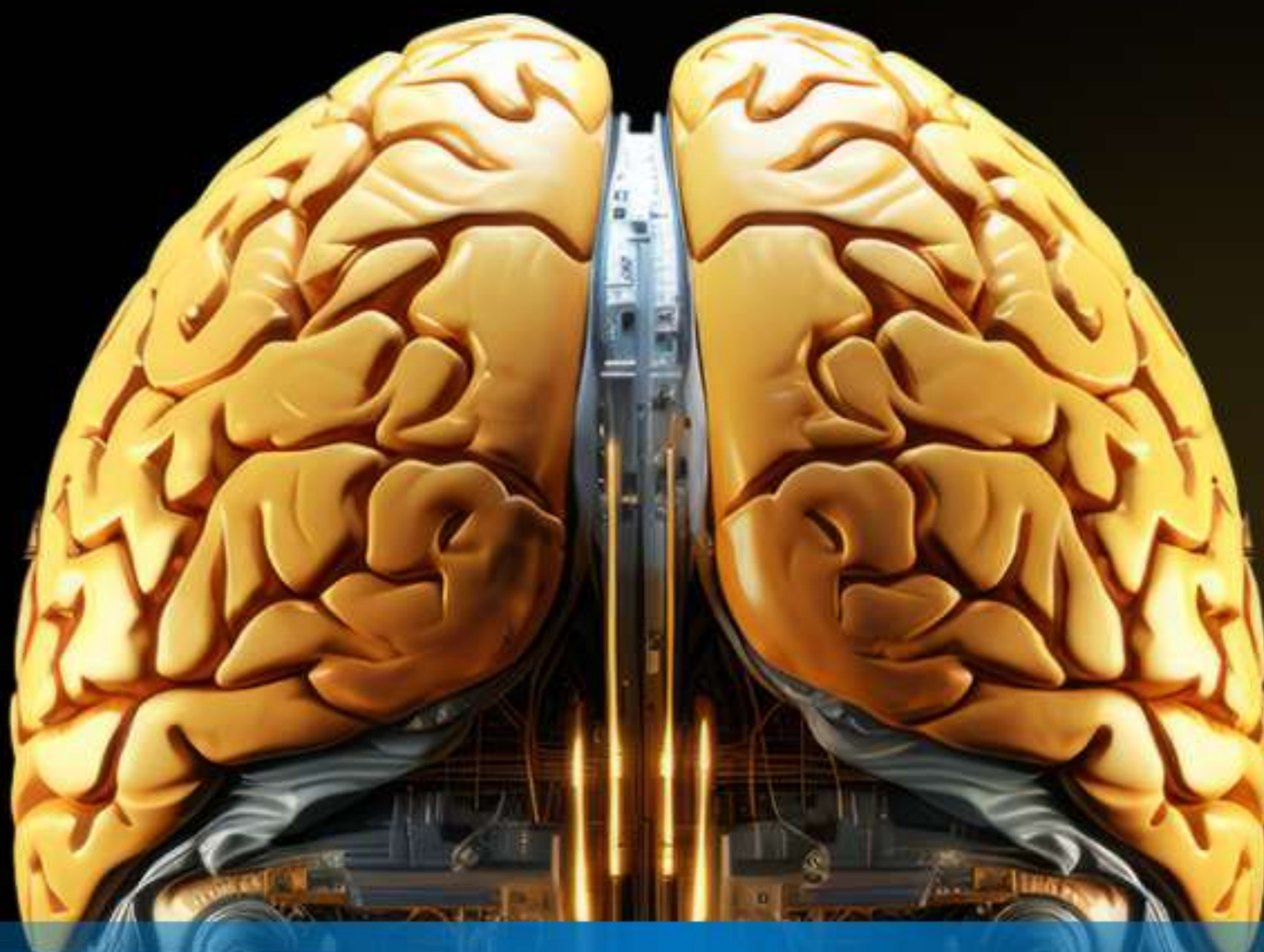
**Accurate Translations:** LLMs translate languages accurately, making global communication easier



**Personalised Experiences:** They tailor content and responses based on user preferences.

**Research Assistance:** They can help researchers by summarising large volumes of text, extracting relevant information.

**Automation of Routine Tasks:** They can automate mundane text-based tasks such as drafting emails, generating reports etc.





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