Large Language Models (LLMs)

Navidut Tauhid

UCC Consultant and Cloud Architect

https://www.linkedin.com/in/naveedtauheed/

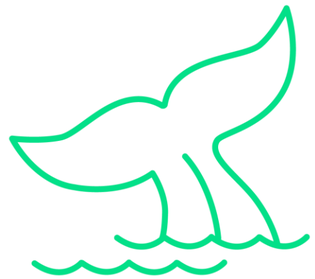
Overview

Large Language Models (LLMs):

- Cutting-edge AI models
- Generating creative text
- Answering complex questions
- LLM architecture
- Challenges

Large Language Models (LLMs)

ChatGPT



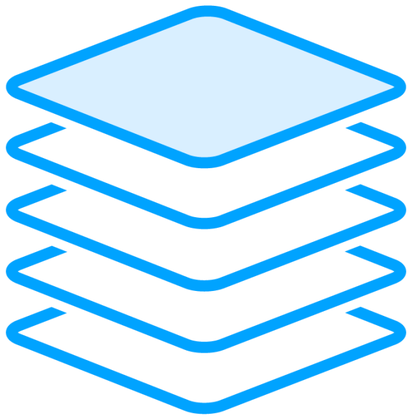
Large Language Model

Large Language Models (LLMs)

Deep learning

Neural network

Large Language Models (LLMs)



Trained on:

- Massive datasets
- News articles and research papers
- GitHub, Wikipedia, Stack Exchange
- Common Crawl, WebText
- Books1 and Books2
- Creative and realistic text
- Translate languages
- Generates codes
- Answer questions
- Human-like

LLMs Architecture

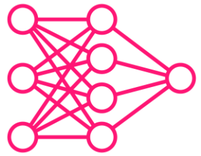
Transformer models

Deep-learning frameworks

TensorFlow

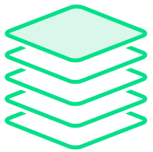
PyTorch

LLMs Architecture



Smaller models

Each layer performs different task



Work together

One layer - understanding the meaning of words

Layers

Another layer - generating text

LLMs Architecture

Example:

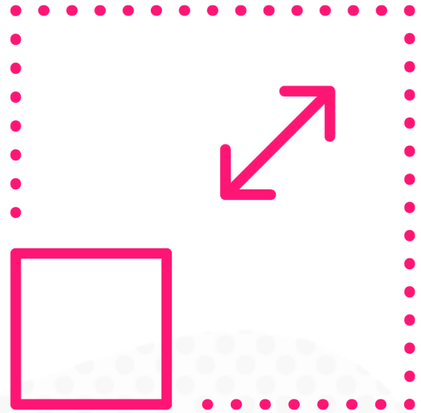
Transformer architecture

Iterations

GPT (Generative Pre-trained Transformer)

GPT 3, GPT 3.5, GPT 4

OpenAI



LLMs example:

- BERT - Bidirectional encoder representations from transformers
- LaMDA - Language model for dialogue applications
- Bard AI
- PaLM - Pathways language model
- Integrated with Google workspaces
- LLaMA - Large language model Meta AI
- Internal apps such as chatbots

LLM Challenges

Inaccurate information and hallucinations

Biased behavior or harmful and malicious content

Data piracy

High computing power and energy consumption

Demo

Review of successful large language models use cases

Summary

Large language model:

- ChatGPT and Bard AI
- Architecture
- Applications

Challenges:

- Inaccuracies, biases, and privacy concerns
- Verify LLM outputs
- Avoid sharing sensitive/copyrighted data