

# **Understanding Generative AI**

## **Leveraging Generative AI**

# LEARNING OBJECTIVE

By the end of the lesson, you will be able to...

- Define Large Language Models (LLMs) and Generative AI
- Summarize how LLMs generate responses
- Identify potential advantages and disadvantages of generative AI tools
- Identify the real-world concerns and implications of generative AI tools





# What are Large Language Models (LLMs)?

**Understanding Generative AI Tools**



# Discussion: Artificial Intelligence

- Take a few moments to consider the question below
- Be ready to share your answers to the class

What comes to mind when you hear **Artificial Intelligence**?

# Defining AI , Generative AI, and LLMs

## Artificial Intelligence

The ability of machines to perform tasks that typically require human-like intelligence, such as learning, problem-solving, pattern recognition, and decision-making, using algorithms, data, and statistical models.

## Generative AI

A type of artificial intelligence that is capable of creating new, original content, such as images, music, and text, based on the patterns and styles it has learned from a dataset.

## Large Language Models

Computer programs or algorithms that are capable of processing and generating natural language text using vast amounts of data and statistical models.

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# Training a Machine Learning Model

## Supervised Learning

Supervised learning is a type of machine learning where the **model learns from labeled examples**.

It's similar to having a teacher who provides correct answers for the model to learn from.

## Unsupervised Learning

Unsupervised learning is a type of machine learning where the **model learns from unlabeled data**.

It's like exploring a dataset without a teacher, where the model tries to find patterns and structures on its own



# Training a Large Language Model

1

## Pre-training

Unsupervised Learning



Pre-training is the initial phase where a large language model is **exposed to a vast amount of text data**. The model learns the structure, patterns, and common language knowledge by assigning values to words and letters. It then uses its knowledge of patterns to predict the next word in a sentence.

2

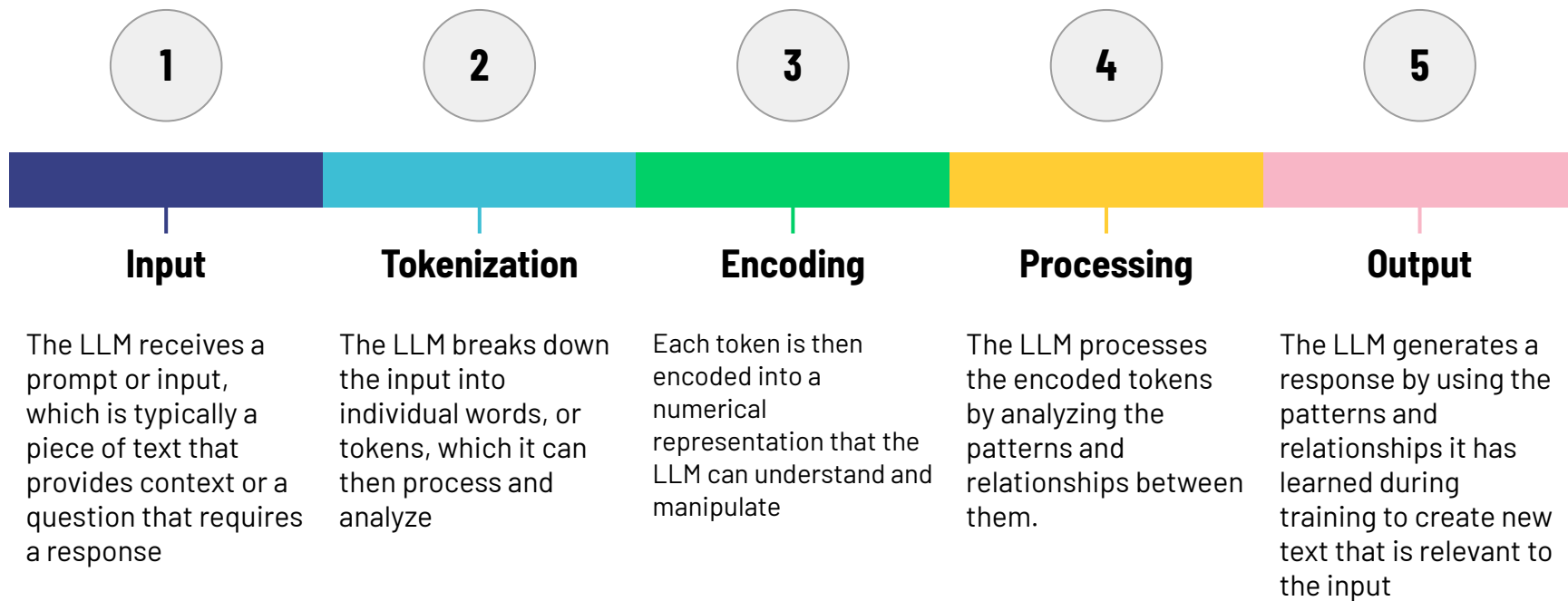
## Fine Tuning

Supervised Learning



The model is trained on a **smaller, task-specific dataset**. The model adapts its pretrained knowledge to **perform well on the target task** by adjusting its architecture and parameters. There is typically a human providing guidance to help the model learn at this stage.

# How an LLM Generates Responses:



# LLMs: A Giant Exercise in Statistics

The promise of large language models is that they

can 62%  
will 11%  
are 7%  
capture 2%  
could 2%

At a very high level, LLMs like **ChatGPT** generate their responses **one word at a time**, based on probability.

However, probability isn't the only factor - often times lower probability options result in a better output.



# What Else Can LLMs Generate?

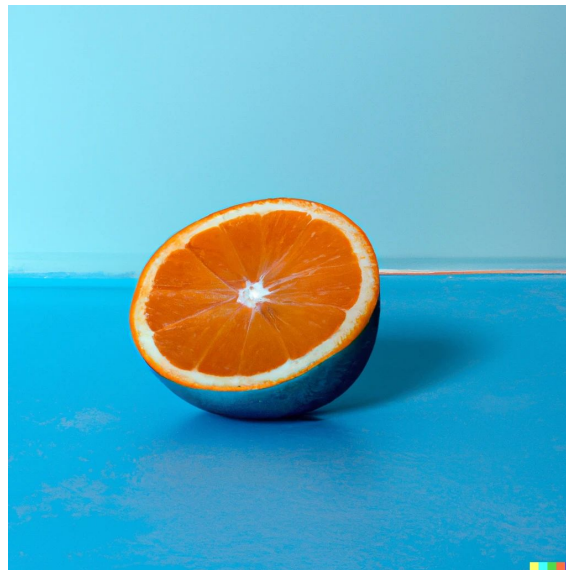
**Understanding Generative AI Tools**

# Images Based on User Inputs

Large Language Models can generate more than just text.

[DALL-E 2](#) is another LLM created by OpenAI that can create realistic images based on the prompts it receives.

**Prompt:** *A blue orange sliced in half laying on a blue floor in front of a blue wall.*



# Discussion: Image Generation

- Take a few moments to consider the question below
- Be ready to share your answers to the class



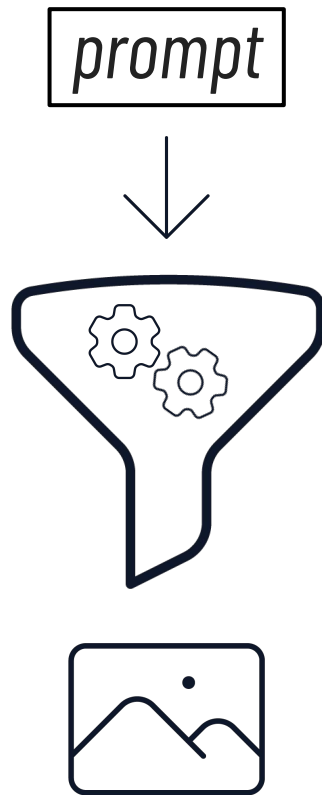
*Image generated using  
DALL-E 2*

Given what you now know about how LLMs generate responses, how do you think AI tools like DALL-E-2 generate images?

# DALL-E 2 Image Generator

## Overly Simplified Explanation:

1. DALL-E 2 receives an input - the user's prompt
2. The prompt is encoded, and DALL-E 2 tries to match parts of the prompt to images from its training data
3. DALL-E 2 starts predicting one part of the image at a time
4. Once DALL-E 2 thinks it has a complete image that matches the original prompt, it “spits” out the image for the user to see



# **Generative AI Tools In the Workplace**

**Understanding Generative AI Tools**





# Partner Exercise: Generative AI Tools in the Workplace

- ☐ Work with a partner or small group and brainstorm together
- ☐ Keep track of your list on a piece of paper
- ☐ Be ready to share!

Create a list of ways you could **use AI in your day-to-day workflow.**

# Generative AI Tools in the Workplace

When asked to create a list of ways it can be used in the workplace, this was chatGPT's response:

1. *Customer Support*
2. *Knowledge Management*
3. *Human Resources*
4. *Sales and Marketing*
5. *Personal Assistant*
6. *Training*
7. *Project Management*
8. *Research*

We could probably spend *hours* thinking of new ways to use a tool like chatGPT at work...



Sure! Here are some ways ChatGPT could be used in the workplace:

1. Customer Support: ChatGPT could be used as a virtual customer service representative, providing customers with instant responses to their inquiries and support needs.
2. Knowledge Management: ChatGPT could be used as a knowledge base for employees, providing answers to frequently asked questions and helping employees quickly find information they need.
3. Human Resources: ChatGPT could be used to assist with HR-related tasks such as answering employee questions, scheduling interviews, and providing information about benefits and policies.
4. Sales and Marketing: ChatGPT could be used to interact with potential customers, answer their questions, and provide information about products and services.
5. Personal Assistant: ChatGPT could be used as a virtual personal assistant, helping employees manage their schedules, set reminders, and prioritize tasks.
6. Training and Development: ChatGPT could be used to provide on-demand training and development resources for employees, including tutorials, videos, and interactive learning experiences.
7. Project Management: ChatGPT could be used to facilitate communication and collaboration among team members, providing real-time updates on project progress and helping team members coordinate tasks and deadlines.
8. Research and Analysis: ChatGPT could be used to assist with research and data analysis tasks, providing quick answers to complex questions and helping employees identify patterns and trends in large datasets.

These are just a few examples of how ChatGPT could be used in the workplace. Its ability to process natural language and generate responses quickly and accurately makes it a versatile tool for a wide range of tasks and applications.

# Partner Exercise: Generative AI Tools in the Workplace

- ☐ Work with a partner or small group and brainstorm together
- ☐ Keep track of your list on a piece of paper
- ☐ Be ready to share!

Create a list of **advantages** and **disadvantages** of using AI in the workplace.

# Generative AI Tools: Pros and Cons

ADVANTAGES	DISADVANTAGES

# AI at Work

*Things to consider when using LLMs at work*

1

LLMs like ChatGPT are **tools; not replacements** for human expertise.

2

Be **specific and clear** in your prompts. The output will only be as good as the input you provide!

3

Remember that **LLMs are not oracles**. They are machine learning models that may not be accurate or up-to-date.

4

Keep **data privacy** in mind. OpenAI stores a log of all the prompts entered into CHatGPT. This data is then used in future training!



# Real World Concerns

## Understanding Generative AI Tools



# Discussion: Artificial Intelligence

## Concerns

- ☐ Read this [open letter](#) asking for a pause to AI experiments
- ☐ Take a few moments to consider the questions below
- ☐ Be ready to share your answers to the class

What is your **reaction** to the concerns voiced in the letter? Do you think they are valid? Why or why not?

# Real-World Examples



## Real People, Fake Stories

ChatGPT claimed a law professor had been at the center of a sexual harassment scandal. It even cited WaPo article that didn't exist as a source!

Source: [Washington Post](#)



## The Honorable, ChatGPT

A judge in Pakistan was asking ChatGPT legal questions before making decisions in civil and criminal cases!

Source: [Pakistan Today](#)



## ChatGPT's Data Dilemma

It is estimated that 10% of data that employees paste into ChatGPT is confidential!

Source: [Cyber Haven](#)



# KEY TAKEAWAYS



## **AI is More Than ChatGPT**

Large Language Models like ChatGPT are just one small part of Artificial intelligence as a whole.



## **AI is a Tool**

AI is a tool people can use to be more productive, but it still requires human expertise.



## **AI Should be Used Responsibly**

Understanding data privacy and ethics is a critical part of using AI effectively and safely at work.

