AI Glossary Cheatsheet

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FUNDAMENTALS

Artificial Intelligence (AI)

Computer systems designed to perform tasks that typically require human intelligence. This includes learning from experience, recognizing patterns, understanding language, and making decisions.

Example:
ChatGPT is an AI that can write essays, answer questions, and hold conversations.

Machine Learning

A type of AI where computers learn from data without being explicitly programmed. The system improves its performance as it processes more examples.

Example:
Email spam filters use machine learning to recognize and block unwanted emails based on patterns.

Neural Network

A computer system inspired by how the brain works. It consists of interconnected nodes (artificial neurons) that process information and learn patterns from data.

Example:
Neural networks power image recognition systems that can identify objects in photos.

Deep Learning

A subset of machine learning that uses neural networks with multiple layers. It's particularly good at processing complex data like images, audio, and text.

Example:
Deep learning enables AI systems to generate human-like text and create realistic images from descriptions.

Large Language Model (LLM)

An AI system trained on huge amounts of text data to understand and generate human language. It predicts the next word based on previous words.

Example:
ChatGPT and Gemini are large language models that can write, summarize, and explain complex topics.

Training Data

The collection of examples and information used to teach an AI system. The quality and diversity of training data significantly affect AI performance.

Example:
An AI image generator is trained on millions of images so it learns how different objects, styles, and compositions look.

Algorithm

A step-by-step procedure or set of rules that a computer follows to solve a problem or complete a task.

Example:
Search engine algorithms determine which websites appear first in your search results.

Natural Language Processing (NLP)

AI technology that helps computers understand, interpret, and generate human language in a meaningful way.

Example:
NLP powers voice assistants like Siri and Alexa, allowing them to understand spoken commands.

Computer Vision

AI technology that enables computers to interpret and understand visual information from images and videos.

Example:
Computer vision is used in facial recognition, medical image analysis, and autonomous vehicles.

Model

A trained AI system that has learned patterns from data and can make predictions or generate outputs. Think of it as the 'brain' of an AI application.

Example:
GPT-4 is a language model, while DALL-E is an image generation model.

Parameter

The adjustable settings or weights in an AI system that determine how it processes information. More parameters generally mean greater capacity to learn complex patterns.

Example:
A large language model might have billions of parameters that get adjusted during training.

Generative AI

AI systems that can create new content like text, images, music, or code based on patterns learned from training data.

Example:
ChatGPT generates text, DALL-E generates images, and Jukebox generates music.

Supervised Learning

A machine learning approach where AI is trained on labeled examples (input-output pairs) so it learns the correct answers.

Example:
Training an AI to recognize spam emails by showing it examples of spam and non-spam messages.

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Unsupervised Learning

A machine learning approach where AI finds patterns in unlabeled data without being told what the correct answers are.

Example:
Grouping customers into segments based on their shopping behavior without predefined categories.

Reinforcement Learning

A machine learning approach where an AI learns by interacting with an environment and receiving rewards or punishments for its actions.

Example:
AlphaGo learned to play chess by playing millions of games and receiving feedback on wins and losses.

USAGE & PROMPTS

Prompt

The input or question you give to an AI system. A well-written prompt helps the AI understand what you want and provides better results.

Example:
Instead of 'Write about AI,' a better prompt is 'Write a 500-word beginner's guide to machine learning for high school students.'

Token

The basic unit of text that an AI language model processes. Tokens are typically words or parts of words.

Example:
The sentence 'Hello world' might be split into 2-3 tokens depending on the tokenization method.

Fine-tuning

The process of taking a pre-trained AI model and training it further on specific data to make it better at a particular task.

Example:
Taking a general language model and fine-tuning it with medical texts to create a medical AI assistant.

API (Application Programming Interface)

A set of rules that allows different software applications to communicate with each other. Many AI tools offer APIs for developers to use.

Example:
Developers use OpenAI's API to integrate ChatGPT into their own applications.

LIMITATIONS

Hallucination

When an AI generates false or made-up information that sounds plausible but isn't true. It's a limitation where AI confidently states incorrect facts.

Example:
An AI might invent a fake quote or attribute a book to the wrong author when it doesn't have accurate information.

Bias

When an AI system shows prejudice or unfair treatment based on patterns in its training data. This can lead to discriminatory outcomes.

Example:
An AI trained primarily on images of certain groups might perform poorly when analyzing images of other groups.

Overfitting

When an AI system memorizes specific training examples too well and performs poorly on new, unseen data. It's like memorizing answers instead of learning concepts.

Example:
An AI trained only on photos of cats might not recognize cats under different lighting or in unusual poses.

EVALUATION METRICS

Accuracy

A measure of how often an AI system makes correct predictions or decisions. Higher accuracy means better performance.

Example:
A medical diagnostic AI tool with 95% accuracy correctly identifies diseases in 95 out of 100 cases.

Precision

A measure of how many of the AI's positive predictions are actually correct. Important when false positives are costly.

Example:
If an AI predicts 100 emails are spam and 90 really are, the precision is 90%.

Recall

A measure of how many actual positive cases the AI correctly identifies. Important when false negatives are costly.

Example:
If there are 100 actual spam emails and the AI catches 90, the recall is 90%.

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APPLICATIONS

Chatbot

An AI program designed to simulate conversation with users. It can answer questions, provide information, or help with tasks.

Example:
Customer service chatbots help answer common questions without human intervention.

Recommendation System

An AI system that suggests products, content, or services based on user preferences and behavior patterns.

Example:
Netflix's recommendation system suggests movies based on what you've watched and rated.

Sentiment Analysis

The ability of AI to determine the emotional tone or opinion expressed in text (positive, negative, or neutral).

Example:
Social media companies use sentiment analysis to detect whether posts contain praise, complaints, or neutral comments.

CONCEPTS

Ethical AI

The practice of developing and using AI systems responsibly, considering fairness, transparency, accountability, and social impact.

Example:
Ethical AI principles guide companies to avoid bias, protect privacy, and be transparent about AI limitations.