

Generative AI

Glossary of Terms

Artificial Intelligence (AI): A branch of computer science that aims to create machines that can perform tasks that typically require human intelligence, such as recognition, reasoning, and decision-making.

Attention Mechanism: A component in some generative AI models that focuses on specific parts of input data when generating output.

Bias: A tendency for ML models to produce results that are systematically skewed or unfair, often due to imbalances in the training data.

Conditional Generation: Generating content based on specific conditions or inputs, adding control to the generative process.

Curriculum Learning: A training strategy where the difficulty of examples presented to the generative AI model increases gradually.

Data Augmentation: The process of artificially increasing the size of a dataset by applying transformations or modifications to the existing data.

Decoding: The process of converting the internal representation of a generative AI model's output into a usable form, like text or an image.

Deep Learning: A type of ML that uses neural networks with many layers, allowing for more complex and abstract representations of data.

Epoch: One complete pass through the entire training dataset during the training of a generative AI model.

Fine-tuning: Adjusting a pre-trained generative AI model on a specific task or domain to enhance its capabilities.

GAN (Generative Adversarial Network): A type of generative AI architecture consisting of a generator and a discriminator, engaged in a competitive learning process.

Generative AI: Artificial Intelligence that can generate new content, such as images, text, or other data, often using models like GPT.

Hallucination: when generative AI analyzes the content given as a prompt but comes to an erroneous conclusion and produces new content that doesn't correspond to reality or its training data.

Hyperparameters: Parameters set before the training process, influencing the learning and behavior of the generative AI model.

Inception Score: A metric used to evaluate the quality and diversity of generated images by a generative AI model.

Inference: The process of using a trained generative AI model to generate new content without further training.

Large Language Model (LLM): A type of artificial intelligence that has been trained on a lot of text data and is a smart conversation partner that can create human-sounding text based on a given prompt.

Latent Space: The abstract space where the generative AI model learns to represent and manipulate data features.

Loss Function: A measure of the difference between the predicted output and the actual output during training, guiding the model to improve its performance.

Machine Learning (ML): A subset of AI that involves training algorithms to make predictions or decisions based on patterns in data, rather than being explicitly programmed.

Mode Collapse: A phenomenon where a generative AI model produces limited and repetitive outputs, failing to explore the full range of possibilities.

Model: A mathematical representation that captures patterns and relationships in data, used by generative AI to generate outputs.

Natural Language Processing (NLP): A field of artificial intelligence that focuses on how computers can understand, interpret, and generate human language. It's the technology behind things like voice-activated virtual assistants, language translation apps, and chatbots.

Neural Network: A type of ML algorithm that is designed to mimic the behavior of the human brain, consisting of layers of interconnected nodes that process and transform data.

Overfitting: When a generative AI model becomes too specific to the training data, performing poorly on new, unseen data.

Prompt: Prompting refers to the input data or instructions that are given to the model as a starting point for generating new data.

Prompt engineering: Refers to determining how to ask a question to get exactly the answer you need. It's carefully crafting or choosing the input (prompt) that you give to a machine learning model to get the best possible output.

Sampling: The process of generating random outputs from a trained generative AI model to explore its creative potential.

Supervised Learning: A type of ML in which the algorithm is trained on a labeled dataset, where each input is associated with a corresponding output.

Training Data: The set of examples used to train a generative AI model, enabling it to learn patterns and generate new content.

Training: The process of feeding data into a ML algorithm to adjust its parameters, allowing it to learn from the data.

Transfer Learning: Utilizing a pre-trained model for a different task, often accelerating training and improving performance.

Underfitting: When a generative AI model is too simple and fails to capture the complexity of the training data.

Unsupervised Learning: A type of ML in which the algorithm is trained on an unlabeled dataset, where the goal is to identify patterns or structure in the data.