Google Cloud

Gen AI: Unlock Foundational Concepts

Congratulations on completing the second course of the Gen AI Leader learning path. This course summary is your review guide. Print it for a handy reference as you continue your gen AI learning journey.

Artificial intelligence (AI): Building machines that can perform tasks that typically require human intelligence, such as learning, problem-solving, and decision-making.

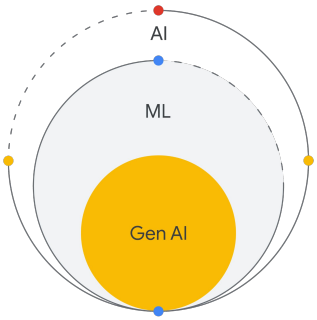
Machine learning (ML): A subfield of AI where machines learn from data to perform specific tasks.

Generative AI: An application of ML that focuses on creating new content.

Deep learning: A subset of ML that uses artificial neural networks with many layers to extract complex patterns from data.

Foundation models: Powerful ML models trained on massive amounts of unlabeled data, allowing them to develop a broad understanding of the world.

Large language models (LLMs): A type of foundation model that is designed to understand and generate human language.

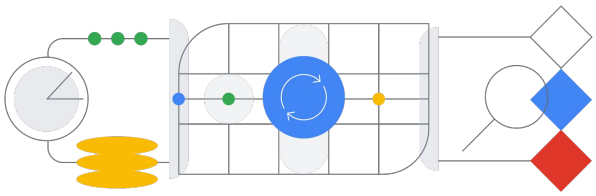


Data is information that can come in many forms: numbers, dates, text descriptions, and even images or sounds.

- **Structured data:** Data that is organized and easy to search, often stored in relational databases.
- **Unstructured data:** Data that lacks a predefined structure and requires sophisticated analysis techniques.
- **Data quality:** Ensure your data is accurate, complete, consistent, and relevant.
- **Data accessibility:** Data for model training needs to be readily available, usable, and in the proper format.

ML lifecycle

- **Data ingestion and preparation:** The process of collecting, cleaning, and transforming raw data into a usable format for analysis or model training.
- **Model training:** The process of creating your ML model using data.
- **Model deployment:** The process of making a trained model available for use.
- **Model management:** The process of managing and maintaining your models over time.



ML has **three primary learning approaches**:

- **Supervised learning** trains models on labeled data to predict outputs for new inputs.
- **Unsupervised learning** uses unlabeled data to find natural groupings and patterns.
- **Reinforcement learning** learns through interaction and feedback to maximize rewards and minimize penalties.

Responsible AI

- **Secure AI:** Protecting your AI applications from harm.
- **Ethical AI:** Ensuring your AI applications don't cause harm and are used in an ethical manner.

The **Secure AI Framework (SAIF)** helps organizations manage AI/ML model risks and ensure security.