

Machine Learning Overview

Define Machine Learning in your own words:

I believe that Machine Learning is a category of technology in which a program can use given data to generate results. It uses its own internal methods to create its output – and can learn or be trained for how to improve its results.

Summarize the importance of data, pattern recognition, and accuracy in machine learning:

Data is very important as it is the input for training models in ML. Pattern recognition is important because it identifies the patterns/relationships between data. Accuracy is important because that decides how good the model is.

Describe the relationship between AI and ML:

Machine learning is a subset of Artificial Intelligence and is specific for creating algorithms and training.

List at least 2 examples of modern machine learning applications, and explain why these applications could not be built with traditional programming:

TikTok and other social media platforms use machine learning to decide what content is relevant to a user. This is a complicated algorithm that requires several factors to depend on. Even though it may be possible for a human to create an algorithm for this – machine learning will always be able to recommend better content for the user with even more data points utilized. Another example would be the recent AI platforms that can generate images like the DALL-E project or others. They take in a natural language text input and can generate images that are requested. This could never be completed with a human-made algorithm – and machine learning will have much more flexibility for different inputs in this case.

Define the terms observation, feature, quantitative data, and qualitative data and discuss their importance in machine learning:

Observation: A single observation is a basic data unit that we use in Machine Learning

Feature: A feature describes observations. An example would be attributes of a car: make, model, etc.

Quantitative Data: This is data that can be measured and represented numerically. An example would be the age of a person.

Qualitative Data: This is data that cannot be measured numerically. An example would be the name of a person.

An observation will contain features that can be either quantitative or qualitative. This is important to Machine Learning as these are the building blocks of the input and output data for models.

Write a paragraph describing your personal interest in ML and whether/how you would like to learn more about ML for personal projects and/or professional application:

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I would like to learn more about machine learning because it can be useful for personal projects. I can use OpenAI's API to help me with my git workflow. I have used it to autogenerate commit messages and help with updating sections of my cover letters as well. I am interested in understanding the innerworkings of Machine Learning.