# Transcript: " Machine learning”

*[Text reads: "Machine learning."]*

A speech bubble appears from a woman with a tablet reading, "AI."

A speech bubble appears from a woman at a laptop reading, "ML."

*[Text reads: "What's the difference?"]*

**Voice Over:** You might have heard the terms “machine learning” and “AI” used interchangeably, and you may be wondering, “What’s the difference?” Well, there is a difference, and it’s important to understand how they are different.

*[A laptop screen reads: "Artificial intelligence, deep learning, machine learning, data science."]*

**Voice Over:** Artificial Intelligence refers to the intelligence exhibited by software and machines. Machine learning, on the other hand, is a subset of AI.

*[Text reads: "All machine learning is AI, but not all AI involves machine learning."]*

**Voice Over:** This means that while all machine learning is AI, not all AI involves machine learning.

*[Text reads: "Machine learning, ML. Machine learning is a data science technique that allows computers to use existing data to forecast future behaviors, outcomes and trends. By using machine learning, computers learn without being explicitly programmed."]*

**Voice Over:** Machine learning is a type of AI where a machine learns from the data it has been given and can identify patterns in that data.

Charts and graphs appear near a laptop.

**Voice Over:** It’s also the process by which machines learn from data and improve their performance over time.

*[Text reads: "Supervised learning, Unsupervised learning and Reinforcement learning."]*

**Voice Over:** It utilizes different types of techniques such as supervised learning, unsupervised learning, and reinforcement learning.

A video game controller appears next to a checkerboard. *[Text reads, Arthur Samuel.]*

**Voice Over:** The term “Machine Learning” was introduced by Arthur Samuel in 1959. Samuel, an American pioneer in the field of computer gaming and AI, created a program that played checkers against itself.

Red and black dots appear on a grid.

**Voice Over:** The machine analyzed the game through repetitive plays, identifying strategies to win and avoid losses. Through playing the game and learning what to do to win, it began to detect recurring patterns and would increasingly follow a pattern.

Equations are drawn on a whiteboard.

**Voice Over:** To achieve this, Samuel had to use mathematics. Concepts such as linear algebra, calculus, probability, and statistics play a crucial role in understanding how machine learning algorithms learn from data and make predictions.

Equations appear above a book.

**Voice Over:** These mathematical concepts help in optimizing the performance of the model, understanding the relationships within the data, and making accurate predictions.

A diagram appears above a checkerboard.

Checker pieces move next to a laptop. *[Text reads: "Learning from experience, replicating results, and improving performance."]*

**Voice Over:** This checkers game is a prime example of a machine learning program. It was learning from its experiences, replicating successful results in other games, and refining its performance over time.

Question marks appear.

**Voice Over:** Need further clarity? Let’s consider the analogy of learning to ride a bicycle.

A child rides a bicycle with training wheels.

**Voice Over:** When you first learn to ride a bicycle, you might have started with training wheels. These training wheels are like the initial data set that we feed into the machine learning model. They provide the basic guidance and stability that the model needs to start learning. As you practice more and more, you start to understand how to balance, when to pedal, and how to steer. This is like how a machine learning model begins to recognize patterns and relationships in the data during the training process.

A child rides a bike.

**Voice Over:** Eventually, the training wheels come off. Now, you’re not just riding the same bike in the same way. You’re adapting to different situations - maybe you’re riding on a hilly path or navigating through a crowded park.

*[Text reads: "Machine learning, truck, plane, bike."]*

**Voice Over:** Similarly, a machine learning model uses the patterns it has learned to adapt to new data and make accurate predictions or perform tasks it was designed for.

Three kids ride bikes.

**Voice Over:** Just like how you can ride different bicycles after you’ve learned the skill, a machine learning model can apply its learning to different but related problems. The bicycle you ride today might not be the one you learned on, but the skill you learned transfers across.

*[Text reads: "Fundamental concepts of machine learning. Learns from data. Identifies patterns. Learns from patterns to make predictions and decisions."]*

**Voice Over:** The fundamental concept of machine learning is when a model learns from data, identifies patterns, and uses these patterns to make predictions or decisions.

A speedometer appears next to a checkerboard.

**Voice Over:** Just like Samuel’s checkers program, machine learning models improve their performance over time through continuous learning and adaptation.

A speech bubble appears from a woman with a tablet reading, "AI."

A speech bubble appears from a woman at a laptop reading, "ML."

*[Text reads: "Supervised learning, Unsupervised learning, Reinforcement learning."]*

**Voice Over:** So, remember, all machine learning is AI, but not all AI is machine learning, and machine learning is broken into different types such as supervised, unsupervised, and reinforcement learning.

The Microsoft logo appears.