**AI Approaches and Concepts**

Less than a decade after breaking the Nazi encryption machine Enigma and helping the Allied Forces win World War II, mathematician Alan Turing changed history a second time with a simple question: "Can machines think?"

Turing's paper "[Computing Machinery and Intelligence](https://www.csee.umbc.edu/courses/471/papers/turing.pdf)" (1950), and its subsequent Turing Test, established the fundamental goal and vision of artificial intelligence.

At its core, AI is the branch of computer science that aims to answer Turing's question in the affirmative. It is the endeavor to replicate or simulate human intelligence in machines.

[The expansive goal of artificial intelligence](https://builtin.com/artificial-intelligence/artificial-intelligence-future) has given rise to many questions and debates. So much so, that no singular definition of the field is universally accepted.

*Can machines think? – Alan Turing, 1950*

The major limitation in defining AI as simply "building machines that are intelligent" is that it doesn't actually explain *what artificial intelligence is? What makes a machine intelligent?*AI is an interdisciplinary science with multiple approaches, but advancements in [machine learning](https://builtin.com/machine-learning) and [deep learning](https://builtin.com/artificial-intelligence/deep-learning) are creating a paradigm shift in virtually every sector of the tech industry.

In their groundbreaking textbook *Artificial Intelligence: A Modern Approach*, authors Stuart Russell and Peter Norvig approach the question by unifying their work around the theme of intelligent agents in machines. With this in mind, AI is "the study of agents that receive percepts from the environment and perform actions." (Russel and Norvig viii)