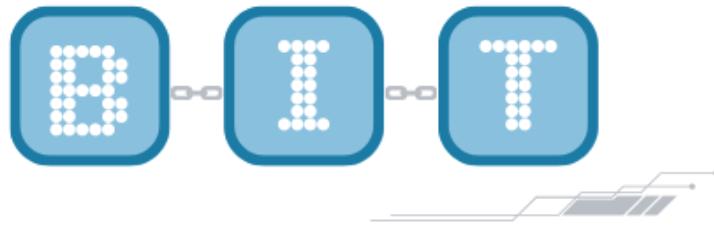


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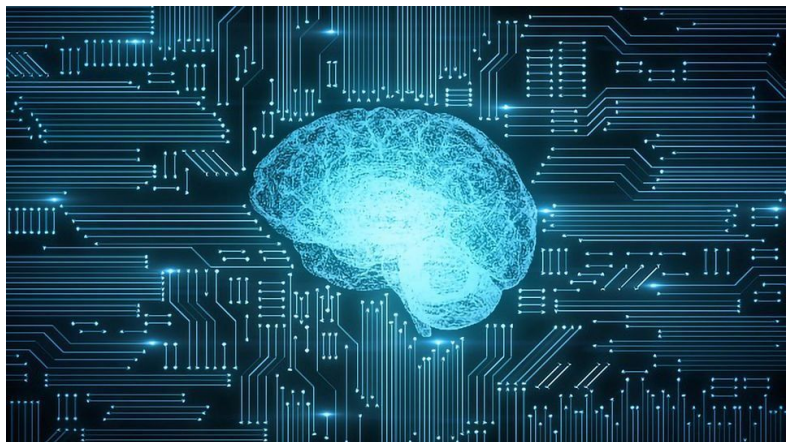
THE BIT
BREAK DOWN

The Development of AI

by [Kyra Gandhi](#) on November 26, 2023

The development process of an artificial intelligence model is long and for many companies often ongoing as they continually improve themselves. It begins with the question, what is the problem we are trying to solve, this is a common entrepreneurial prompt and is labeled as “**problem definition**”.

Following the identification of the problem, we enter **data collection and preprocessing**, in which data the AI bases its knowledge on is collected and cleaned for usage. It is then that a model is selected to work off of and trained to perform to address the problem. As the AI becomes more developed it goes through **evaluation and validation**, using a different data set from its own to validate that it is properly working as an algorithm. Once it has been validated it enters **deployment** where it is used in the real world. This ends the process of development and begins the stage of improvement. **Inference** is where new incoming data is inputted for practical use. This is continued by **monitoring and maintenance** by the development team and a **feedback loop** from users’ experience. The company that owns the AI further has choices to make in



scaling and optimization, optimizing the system's infrastructure and performance. As well as in **ethical consideration** of their company and algorithm, addressing bias, privacy concerns, and transparency.

Categorizing AI

by [Kyra Gandhi](#) on November 26, 2023

Within categorizing AI there are many categories to discern from.

One of which is divided by capabilities. Artificial narrow intelligence, or ANI, is developed in order to perform specific tasks, accordingly, they have relatively limited domains. They lack general human awareness and intelligence and are less advanced in comparison to their counterparts. Examples of ANI are chatbots like Alexa and Siri along with Netflix's personalized recommendation technology.

In contrast to ANI, artificial general intelligence, or AGI, can perform any task a human can as well as adapt to new unfamiliar situations. AGI is more of a long-term goal of research yet to be realized rather than a current technology. It is the idea of what AI could become in the future. It is characterized as a human-like intelligence, possessing the ability to understand, learn, and apply knowledge.

Another type of classification is by functionalities and applications. Reactive machines follow predefined rules and do not learn from experience. Like ANI, they are designed to perform specific tasks and do not adapt over time. An example is a basic chess-playing program. Limited memory refers to an AI that has some form of memory but, as the name follows, it is limited. They learn from historical data and make decisions based on past experiences. Self-driving cars are an example of this technology. Theory of mind AI is much more advanced. They have the capability to understand human emotions, intentions, beliefs, and social cues. Furthermore, they are able to interact with humans in a human way. Although many developers are currently working to create this kind of technology, as of now, it has not yet been fully realized. Self-aware AI is currently theoretical, it is characterized as having consciousness and self-awareness similar to humans.



AI Model Types

An AI model is a mathematical framework or computational algorithm designed to replicate human intelligence. These models are the core components responsible for making predictions and decisions, and generating outputs based on input data in an AI system. There are various types of models each designed to address specific tasks and challenges.

Generative models aim to generate new data that is similar to training data.

Discriminative models focus on distinguishing between different classes or categories, learning the boundary between the classes, and making predictions based on input.

Deep Learning models refer to neural networks with three or more layers, allowing them to learn complex representations of data. It is a subfield of machine learning where networks attempt to simulate the behavior of the human brain to learn from large amounts of data.

Ensemble models combine the predictions of multiple individual models to achieve better overall performance compared to each model on its own.

Probabilistic models incorporate probability theory to represent uncertainty and make predictions based on the likelihood of different outcomes.

Transfer Learning involves training a model on one task and then fine-tuning it for a different, related task. It leverages knowledge gained from the source task to improve performance on the target task (Ex: GPT by Open AI).

Rule-based systems use explicit rules to make decisions or draw conclusions, relying on predefined conditions and actions.

Clustering involves grouping similar data points together based on certain criteria or features, facilitating the identification of patterns or structures within the data.

Unraveling the Feathered Code of Nature's AI

by [Daniella Nunez](#) on November 26, 2023

A new study has shed light on the remarkable problem-solving abilities of pigeons, revealing pigeons use the same task-solving principles as artificial intelligence (AI). The study consisted of 24 pigeons given tasks. The Pigeons were shown different stimuli - lines of various widths and angles, concentric rings, and sectioned rings. Each pigeon had to peck a



button on right or left to indicate the category of the shown stimuli. If the bird was correct, it was given a food pellet. If it was incorrect, nothing was given. Through trial and error the pigeons improved their ability to make correct choices. For easier movements, the accuracy rose from 55% to 95%. For more difficult movements, the pigeon's accuracy rose from 55% to 68%. Pigeons, like AI models, are able to recognize patterns and make decisions. Researchers believed the pigeons use associative learning linking the systems of associative learning and cognition in AI.



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