

# Artificial Intelligence

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**Abstract-** AI research has focused on improving the decision-making capabilities of computers, i.e., the ability to select high-quality actions in pursuit of a given objective. When the objective is aligned with the values of the human race, this can lead to tremendous benefits. AI is the broader concept of machines being able to carry out tasks in a way that we would consider smart. AI are systems or devices which are built for specific task. These are far more common like systems designed to intelligently trade stocks and shares, or to maneuver an autonomous vehicle.

## Introduction

The word Artificial Intelligence comprises of two words “Artificial” and “Intelligence”. Artificial refers to something which is made by human and Intelligence means the ability to understand or think. There is a misconception that Artificial Intelligence is a system, but it is not a system. AI is implemented in the system. It is an intelligence where we want to add all the capabilities to a machine that human contains. AI stands for Artificial intelligence, where intelligence is defined acquisition of knowledge intelligence is defined as an ability to acquire and apply knowledge. The main aim of artificial intelligence is to increase the chance of success and not the accuracy of the model. It works like a computer program that does smart work. The goal is to simulate natural intelligence to solve complex problems. It

leads to developing a system to mimic human to respond behave in a circumstance. AI goes for finding the optimal solution.

### Current Uses of AI:

Although artificial intelligence evokes thoughts of science fiction, artificial intelligence already has many uses today, for example:

**Email filtering:** Email services use artificial intelligence to filter incoming emails. Users can train their spam filters by marking emails as “spam”.

**Personalization:** Online services use artificial intelligence to personalize your experience. Services, like Amazon or Netflix, “learn” from your previous purchases and the purchases of other users in order to recommend relevant content for you.

**Fraud detection:** Banks use artificial intelligence to determine if there is strange activity on your account. Unexpected activity, such as foreign transactions, could be flagged by the algorithm.

**Speech recognition:** Applications use artificial intelligence to optimize speech recognition functions. Examples include intelligent personal assistants, e.g. Amazon’s “Alexa” or Apple’s “Siri”.

**Artificial Intelligence** – What it’s all about Artificial intelligence (AI) traditionally refers to an artificial creation of human-like intelligence that can learn, reason, plan, perceive, or process natural language. Artificial intelligence is further defined as “narrow AI” or “general AI”. Narrow AI, which we interact with today, is designed to perform specific tasks within a domain (e.g. language translation). General AI is hypothetical and not domain specific, but can learn and perform tasks anywhere. This is outside the scope of this paper. This paper focuses on advances in narrow AI, particularly on the development of new algorithms and models in a field of computer science referred to as machine learning.

#### **How machines learn:**

Although a machine learning model may apply a mix of different techniques, the methods for learning can typically be categorized as three general types:

**Supervised learning:** The learning algorithm is given labeled data and the desired output. For example, pictures of dogs labeled “dog” will help the algorithm identify the rules to classify pictures of dogs.

**Unsupervised learning:** The data given to the learning algorithm is unlabeled, and the algorithm is asked to identify patterns in the input data. For example, the recommendation system of an e-commerce website where the learning algorithm discovers similar items often bought together.

**Reinforcement learning:** The algorithm interacts with a dynamic environment that provides feedback in terms of rewards and punishments. For example, self-driving cars being rewarded to stay on the road.<sup>1</sup>



#### **Why now?**

Machine learning is not new. Many of the learning algorithms that spurred new interest in the field, such as neural networks, are based on decades old research. The current growth in AI and machine learning is tied to developments in three important areas:

**Data availability:** Just over 3 billion people are online with an estimated 17 billion connected devices or sensors. That generates a large amount of data which, combined with decreasing costs of data storage, is easily available for use. Machine learning can use this as training data for learning algorithms, developing new rules to perform increasingly complex tasks.

**Computing power:** Powerful computers and the ability to connect remote processing power through the Internet make it possible for machine-learning techniques that process enormous amounts of data.

**Algorithmic innovation:** New machine learning techniques, specifically in layered neural networks – also known as “deep learning” – have inspired new services, but is also spurring investments and research in other parts of the field.



Responsible Deployment

**Principle:** The capacity of an AI agent to act autonomously, and to adapt its behavior over time without human direction, calls for significant safety checks before deployment, and ongoing monitoring.

**Recommendations Humans must be in control:** Any autonomous system must allow for a human to interrupt an activity or shutdown the system (an “off-switch”). There may also be a need to incorporate human checks on new decision-making strategies in AI system design, especially where the risk to human life and safety is great.

**Make safety a priority:** Any deployment of an autonomous system should be extensively tested beforehand to ensure the AI agent’s safe interaction with its environment (digital or physical) and that it functions as intended. Autonomous systems should be monitored while in operation, and updated or corrected as needed.

**Privacy is key:** AI systems must be data responsible. They should use only what they need and delete it when it is no longer needed (“data minimization”). They should encrypt data in transit and at rest, and

restrict access to authorized persons (“access control”). AI systems should only collect, use, share and store data in accordance with privacy and personal data laws and best practices.

**Think before you act:** Careful thought should be given to the instructions and data provided to AI systems. AI systems should not be trained with data that is biased, inaccurate, incomplete or misleading.

**If they are connected, they must be secured:** AI systems that are connected to the Internet should be secured not only for their protection, but also to protect the Internet from malfunctioning or malware-infected AI systems that could become the next-generation of botnets. High standards of device, system and network security should be applied.

Acknowledgement

We would like to express our deepest appreciation to **Mohammad Salim Sir (Assistant Professor, CCSIT, TMU)** for his kind cooperation and encouragement which help us in completion of this paper.

Reference

[1]<https://www.quora.com>

[2] <https://www.internetsociety.org/>