**ARTIFICIAL INTELLIGENCE**

(SAMYA MUKHERJEE)

Artificial Intelligence (AI) is the wide-ranging branch of Computer Science, concerned with building smart machines, capable of performing tasks, that typically require the human intelligence – it is the endeavour to replicate or simulate human intelligence within machines. Thus, Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits, associated with the human mind such as learning and solving the problems. Artificial intelligence made possible for the deposition of cheques from the comfort of one’s home and is proficient in deciphering handwriting, making online cheque processing practicable, the way of detecting the frauds by observing user’s credit card and the spending patterns. Reactive machines (simplest level of robot), limited memory machine (a machine which is able to retain some information learned from observing previous events or data), theory of mind and self-awareness are the four actual types of artificial intelligence.

Artificial Intelligence (AI) is the intelligence, demonstrated by machines, unlike the natural intelligence displayed by humans and animals; which involves consciousness and emotionality. The distinction between the former and the latter categories is often revealed by the acronym chosen. Strong AI is usually labelled as Artificial General Intelligence (AGI), while attempts to emulate the natural intelligence have been called ‘Artificial Biological Intelligence’ (ABI). Leading AI textbooks define the field as the study of ‘intelligent agents’ – any device that perceives its environment and takes the actions that maximize its chance of successfully achieving its goals. Colloquially, the term ‘Artificial Intelligence’ is often used to describe the machines that mimic cognitive functions that humans associate with the human mind (such as learning and solving problems). As machines become increasingly capable, tasks considered to require ‘intelligence’ are often removed from the definition of AI by the phenomenon known as the AI effect. A quip in Tesler’s theorem states – “AI is whatever has not been done yet.” Optical character recognition i frequently excluded from the things considered to be AI, having a routine technology. Modern machine capabilities, generally classified as AI, include the successful understanding of human speech, competing at the highest level in strategic game systems (such as chess) and also imperfect-information games like poker self-driving cars, intelligent routing in content delivery networks and military simulations. Intended utility functions of Artificial Intelligence (AI) can be simple (“1 if the AI wins a game of Go, 0 otherwise”) or complex (“performs actions mathematically similar to ones that succeeded in the past”). Goals can be explicitly defined or induced. If AI is programmed for ‘reinforcement learning’, goals can be implicitly induced, by rewarding some types of behaviour or punishing others. Alternatively, an evolutionary system can induce the goals by using ‘fitness functions’ to mutate and preferentially replicate the high-scoring AI systems, similar to how animals evolved to innately desire certain goals. Some AI systems can be benchmarked if the non-goal system is framed as a system, whose goal is to successfully accomplish its narrow classification task. AI often revolves around the use of algorithms. An algorithm is a set of unambiguous instructions that a mechanical computer can execute. A complex algorithm is often built on the top of other – simpler algorithm.

Artificial Intelligence (AI) was founded as an academic discipline in 1955 and in the years since has expired several waves of optimism, followed by disappointment and the loss of funding (known as AI winter), followed by the new approaches, success and renewed funding. After AlphaGo successfully defeated a professional Go player in 2015, Artificial Intelligence once again attracted the widespread global attention. AI research has been divided into subfields that often fail to communicate with each other. These subfields are based on technical considerations such as particular goals (robotics or machine learning), the use of particular tools (logic or artificial neutral networks) or deep philosophical differences. Subfields are also been based on the social factors (particular institutions or the work of particular researchers). The traditional problems or goals of Artificial Intelligence research include reasoning, knowledge-representation, planning, learning, natural language processing, perception and the ability to move and manipulate objects. AGI is among the field’s long-term goals. Approaches include statistical methods, computational intelligence and traditional symbolic AI. Many tools are used in AI, include versions of search and mathematical optimization, artificial neutral networks and the methods based on statistics, probability and economics. The AI field draws upon Computer Science, Information Engineering, Mathematics, Psychology, Linguistics, Philosophy and many other fields. Some people consider AI to be a danger to humanity if it progresses unabated. Others believe that AI, unlike previous technological revolutions will create a risk of mass-unemployment. In 21st century, AI techniques have experienced a resurgence following concurrent advances in computer-power, large amounts of data and theoretical understanding. AI techniques have become an essential part of the technological industry, helping to solve many challenging problems in Computer Science, Software Engineering and Operational Research.

Artificial Intelligence (AI) is relevant to intellectual task. Modern AI techniques are pervasive and are too numerous to list here. Frequently, when a technique reaches a mainstream use, it is no longer considered as Artificial Intelligence – this phenomenon is described as the AI effect. High profile examples of Artificial Intelligence include autonomous vehicles (such as drones and self-driving cars), medical diagnosis, creating art (such as poetry), proving mathematical theorems, search engines (such as Google Search), online assistants (such as SIRI), image recognition in photographs, spam filtering, predicting flight delays, prediction of judicial decisions, targeting online advertisements and energy storage. With social media sites overtaking TV as a source for news for young people and news organizations; increasingly reliant on the social media platforms for generating distribution – major publishers now use Artificial Intelligence (AI) technology to post stories more effectively and generate higher volumes of traffic. AI can also produce Deepfakes, a content altering technology.

The regulation of the Artificial Intelligence is the development of the public-sector policies and laws for promoting and regulating Artificial Intelligence (AI); it is therefore related to the broader regulations of algorithms. The regulatory and policy landscape for AI is an emerging issue in jurisdictions globally, including in the European Union. Regulation is considered necessary to both encouraging and managing the associated risks of AI. Regulation of AI through mechanisms such as review boards can also be seen as social means to approach the controlling problem of Artificial Intelligence. The long term economic effects of AI are uncertain. A survey of economists showed disagreement about whether the increasing use of robots and AI will cause a substantial increase in the long term unemployment but it is generally agreed that it could be a net benefit if the productivity gains are re-distributed.

The common three philosophical question arise regarding Artificial Intelligence are as follows : 1) Whether artificial intelligence is possible, whether a machine can solve any problem that a human being can solve using intelligence or if there are hard limits to what a machine can accomplish. 2) Whether intelligent machines are dangerous; how humans can ensure that machines behave ethically and that they are used ethically. 3) Whether a machine can have a mind, consciousness and mental states in the same sense that human beings do; if a machine can be sentient and thus deserve certain rights and if a machine can intentionally cause harm.