

Artificial Intelligence: At A Glance

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Abstract – *The invention in Artificial Intelligence has based on tools and techniques of many different disciplines, including formal logic Linguistic intelligence, Musical intelligence, Logical-mathematical intelligence, Intra-personal intelligence Spatial intelligence, bodily kinesthetic intelligence, probability theory, power systems management science, decision theory, computer science, mathematics, biology, linguistics and philosophy. The application of these disciplines in AI has necessitated invention of many enhancements and extensions. The evolution has some limitations .This paper focus on the advancement, current scenario and constraint of Artificial Intelligence.*

Key Words: Artificial Intelligence, AI evolution, AI advantages, AI Disadvantages

1. INTRODUCTION

The field of artificial intelligence came into existence in the 1950s. Its intention was that to get a computer able to do tasks as a human. If machine can do the things the human can do then it can be said to be Intelligent Machine. This intelligent machine can mimic humans and then do it themselves or better than the human.

1.1 Invention of Artificial Intelligence

Alan Turing is published the “Computing Machinery & Intelligence” in the year of 1950. He suggest “the imitation game” also known as the “Turing Test” in which a machine tries to impersonate itself as a human being in an imitation game by giving human-like responses to a series of questions. He believed that if a machine could make a human being believe that he or she is communicating with another human being, then machine can be considered as intelligent as a human being. On August 31, 1955, the concept of “artificial intelligence” is produced in a proposal for a “2 month, 10 man study of artificial intelligence” submitted by John McCarthy (Dartmouth College), Marvin Minsky (Harvard University), Nathaniel Rochester (IBM), and Claude Shannon (Bell Telephone Laboratories). The workshop held in July and August 1956, is generally considered as new beginning.

- During the 1980s and 1990s, new approach was made in artificial intelligence to build Artificial Intelligence to overcome problems human minds cannot calculate. Real world problems for example such as in medicine,

finance and aeronautics. But this Artificial Intelligence has the ability to be faster and better than a human mind .Consequence of this was now the artificial system could potentially outperform a human brain. (Garrido, 2010)

December 1955	Herbert Simon and Allen Newell developed the Logic Theorist , the first artificial intelligence program
1957	Frank Rosenblatt developed the Perceptron. It is early artificial neural network enabling pattern recognition based on a two-layer computer learning network
1958	John McCarthy developed LISP programming language
1959	Arthur Samuel coins the term “machine learning,” reporting on programming a computer “so that it will learn to play a better game of checkers than can be played by the person who wrote the program.”
1959	Oliver Selfridge publishes “Pandemonium: A paradigm for learning” in the <i>Proceedings of the Symposium on Mechanization of Thought Processes</i> , in which he describes a model for a process by which computers could recognize patterns that have not been specified in advance
1961	Unimate, the first industrial robot, started working in New Jersey on an assembly line in a General Motors plant.
1961	James Slagle develops SAINT (Symbolic Automatic Integrator), a heuristic program that solved symbolic integration problems in freshman calculus.
1965	Joseph Weizenbaum developed ELIZA. It is an interactive program that carries on a dialogue in English language on any topic.
1965	Edward Feigenbaum, Bruce G. Buchanan, Joshua Lederberg, and Carl Djerassi started working on DENDRAL at Stanford University. DENDRAL is the first expert system. It automated the decision-making process and problem-solving behavior of organic chemists, with the general aim of studying hypothesis formation and constructing models of empirical induction in science.

1966	The first general-purpose mobile robot, Shakey is able to reason about its own actions.
1968	Terry Wino grad developed SHRDLU. It is an early natural language understanding computer program.
1969	Arthur Bryson and Yu-Chi Ho described back propagation as a multi-stage dynamic system optimization method. A learning algorithm for multi-layer artificial neural networks, it has contributed significantly to the success of deep learning in the 2000s and 2010s, once computing power has sufficiently advanced to accommodate the training of large networks.
1970	The WABOT-1 is the first anthropomorphic robot made at Waseda University, Japan. It consist of a limb-control system, conversation system & vision system.
1972	MYCIN - backward expert system for searching bacteria causing serious infections and recommending antibiotics which is developed at Stanford -University.
1978	The XCON (eXpert CONFIGurer) listing-A production rule-based expert system. This system served in the ordering of DEC's VAX computers by automatically selecting the components based on the customer's need, advanced at Carnegie Mellon University.
1980	Wabot-2 is built at Waseda University, Japan. It was a instrumentalist humanoid robot which is able to communicate with a person, read a musical score and play tunes of average difficulty on an electronic organ
1986	First driverless car, drives up to 55 mph on empty streets-a Mercedes-Benz van equipped with cameras and sensors, built at Bundeswehr University in Munich under the direction of Ernst Dickmanns
1995	Richard Wallace developed the chat bot A.L.I.C.E (Artificial Linguistic Internet Computer Entity), inspired by ELIZA program.
1997	Sepp Hochreiter and Jürgen Schmidhuber proposed a type of a recurrent neural network used today in handwriting recognition and speech recognition i.e Long Short-Term Memory (LSTM),.
1998	Dave Hampton and Caleb Chung created the first domestic or pet robot Furby .
2000	MIT's Cynthia Breazeal developed a robot that could recognize and simulate emotions Kismet .
2000	Honda's artificially intelligent humanoid robot ASIMO is able to walk as fast as a human, delivering trays to customers in a restaurant setting.
2009	Google started developing a driverless car . In 2014, it became the first to pass, in Nevada , a U.S. state self-driving test.

October 2012	A convolutional neural network designed by researchers at the University of Toronto who achieve an error rate of only 16% in the Image Net Large Scale Visual Recognition Challenge , a significant improvement over the 25% error rate achieved by the best entry the year before.
March 2016	Google DeepMind's AlphaGo defeats Go champion Lee Sedol.

1.2 Application field of Artificial intelligence

Artificial intelligence currently influences our lives more than ever before. The areas of AI application are diverse and the possibilities far-reaching, and thanks to recent improvements in computer hardware, certain AI algorithms already surpass the capacities of today's human experts. AI capacity is improving day by day therefore its field of application is growing. As a result, its relevant algorithms will start optimizing.

Artificial intelligence Application in routine life

- In Communication system
- Time management
- Health & safety
- Augmentation of cognition
- Smart Cars
- Education
- Fraud Detection
- Purchase prediction
- Informational needs, Goals.
- Video Games like chess & pokar
- Products, marketing
- Opportunistic planning

Artificial intelligence in Science

- Automated discovery
- Design of experiments
- Triaging of resources
- Interpretation of data
- Probing complexity
- Chemistry, Biology, Climate, medicine

Artificial intelligence and Infrastructure

- Transportation
- Commerce decision making
- Power & conservation
- Agriculture
- Architecture and Engineering

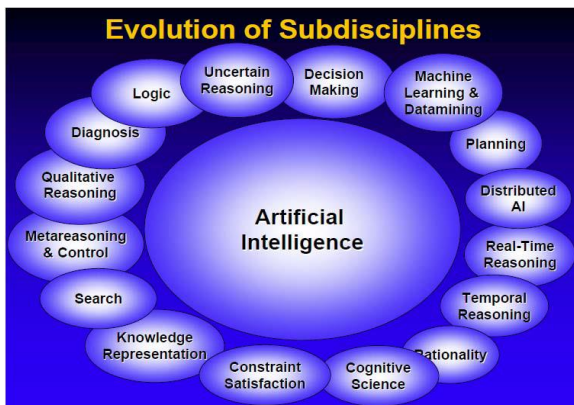
Artificial intelligence and the Consumers

- Challenges and opportunities with data & privacy
- Evolving relationship with computation
- Reasoning & learning, Sensing
- Personalized smart applications

Artificial intelligence and Power Station

- Power system control
- Fault diagnosis.
- Load forecasting.
- Reactive power planning and its control.
- Unit commitment, hydro-thermal coordination, load and power flow.

- Voltage control, power flow control, loads frequency control, stability control,
- Control of power plants
- Automation of power system



IBM Watson: It is a cognitive system that is designed to understand data, reason, and learn at scale. It provides cognitive APIs that leverage natural language processing and machine learning—among other things—to analyze data, learn from data, and derive insights. “There is value to be gained from systems that go beyond general abstractions and reason in specialized ways,” said IBM’s Nwuke.

Microsoft: Microsoft provides cognitive services that allow developers to build Windows, Android, and iOS apps using powerful artificial intelligence algorithms. The services include APIs for vision, speech, language and knowledge.

1.4 Artificial Intelligence Pros

Tireless performance of tasks is one of the biggest advantages of artificial intelligence. It is possible to perform a job without human efforts with the help of AI. A machine can do a particular job in the blink of an eye. Thus you see how the ‘tireless factor’ in its very own way has managed to add to the success of artificial intelligence. AI methods are least risky when it is acceptable to get an incorrect result or no result at all. When a decision is made, human being thinks of his emotions which will affect the decision. With an artificial mind it is more about logical decisions and feasible solutions. Intelligent robots can take the right decision whereas human thinks emotionally. Robots do not tire off. They can do the task repeatedly without tiredness and with the same accuracy. They do not need a break unlike human beings. With artificial intelligence ‘copying’ becomes much easier. Copying refers to the training of an artificial mind to perform a particular task, duplication of task. Intelligent robots can be used to explore space. They are machines and hence have the ability to endure the hostile environment of the interplanetary space. They can be made to adapt in such a way that planetary atmospheres do not affect their physical state and functioning. Intelligent robots can be used to dig for fuels. They can be used for mining purposes. They can be used in dangerous tasks. These machines serve human so well especially where human intelligence has serious limitations.

gradually become available for common use in the future. It is important that carefully constructed legal protocols are in place before this happens, so as to realize the strength of such technologies in ways that safely minimizes any risks of negative development. The more progress is made in area of AI technology, more pressing a rational, far-sighted approach to the associated challenges becomes. There is large amount of responsibility on the individual researchers and developers because political and legal progress tends to lag behind technological development

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1.3 Major digital brains in the space

According to Anglin, the major digital brains in the space are

Facebook: Facebook has an AI research department that is dedicated to advancing machine learning and developing intelligent machines. Recently the company open-sourced its Artificial Intelligence hardware design, codenamed Big Sur, which handles Artificial Intelligence computing at a large scale. It also announced new algorithms such as DeepMask, a segmentation framework; DeepText, the company’s deep learning-based text understanding engine; SharpMask, a segment refinement model and MultiPathNet, an object detection solution. **Google:** Google recently open-sourced its Tensor Flow library for machine learning. According to Anglin, Tensor Flow is a little bit more complex than other cognitive services, but it wraps up a lot of scientific programming and packages it in a way that the average application developer can leverage and embed in their applications.

Intelligent machines can replace human beings in many areas of work. Robots can do certain laborious tasks.

1.5 Artificial Intelligence Cons

Many experts believe that, alongside global opportunities, AI poses global risks surpassing those of e.g. nuclear technology. It is not possible to use intelligent machines at all places E.g. Hospitals. Such machines are not useful in creative areas because they don’t have creative mind. If robots begin replacing humans in every field, it may lead to unemployment. People will be left with nothing to do. Empty time may destruct their life.

3. CONCLUSIONS

Today, we are observing the expansion of novel Artificial Intelligence technologies with unexpected potential. The AI technology is currently in search of Watson-assisted medical diagnosing, US military drones & driverless cars and will

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