IMPORTANCE OF ARTIFICIAL INTELLIGENCE TOOLS

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Abstract

This paper," Importance of Artificial Intelligence Tools" helps us in understanding the real concept of artificial intelligence and the importance of artificial intelligence tools. It gives the awareness of how artificial intelligence (AI) plays an important role in our daily life especially in the case of medicine. This system is working throughout the world as an artificial brain. In this paper information regarding the tools of AI and it solves the current problems in the field of medicine. There seems to be many pitfalls in the field of medicine which can't be resolved b any other means other than AI. Thus further improvement in the field of AI will be a boon for the development of scientific technology and to researchers, if done as it has to be. There seems to be many cons in the current trend which can be easily solved. Thus one of the applications of computer science being artificial intelligence solves all these problems and helps in accessing individual patient risk.

INTRODUCTION

Intelligence exhibited by an artificial (non-natural, man-made) entity. It is the branch of computer science dealing with the reproduction or mimicking of human-level thought in computers. Intelligence involves mechanisms, and AI research has discovered how to make

computers carry out some of them and not others. If doing a task requires only mechanisms that are well understood today, computer programs can give very impressive performances on these tasks. Such programs should be considered somewhat intelligent. It explains about the importance of artificial intelligence tools and how it resolves the pitfalls in the field of medicine. It is related to the similar task of using computers to understand human intelligence.**Then section 2** deals with the existing system which includes the branches of AI, the pros and cons of AI and the applications of AI. **Section 3** deals with the proposed work which gives solutions to the existing problems especially in case of cardio vascular disease. **Section 4** deals with the applications of AI in other fields and finally **section 5** deals with the future enhancement.

Table 1: History of AI

YEAR	NAME	INVENTION
1956	John McCarthy	The term Artificial Intelligence was coined
1957	Newell, Shaw and Simon	Demonstration of General Problem Solver
1952-62	Arthur Samuel	First game playing program was written
1958	John McCarthy	Lisp language was invented
1964	Danny Bobrow	Showed that computer can't understand natural language
1968	Marvin Minsky and Seymour	Demonstration of the limits of neural networks
Early 70's	John Robinson	Established influential natural language processing
1974	Ted Shortiffe	Demo of first expert system
1990	Rod Brooks	Built a humanoid robot
2000	Cynthia Breazeal	Interactive robot became commercially available

Research in AI has focussed chiefly on the following components of intelligence: learning, reasoning, problem-solving, perception, and language-understanding.

Learning: The simplest is learning by trial-and-error.

Reasoning: To reason is to draw inferences appropriate to the situation in hand.

Problem-solving: Problems have the general form: given such-and-such data, find x. A huge variety of types of problem is addressed in AI. Some examples are: finding winning moves in board games; identifying people from their photographs.

Perception: In perception the environment is scanned by means of various sense-organs, real or artificial, and processes internal to the perceiver analyze the scene into objects and their features and relationships.

Language-understanding: A language is a system of signs having meaning by convention.

II.EXISTING SYSTEM

The existing system helps in understanding how artificial intelligence is useful in our day to day life. It also tells us about the pros and cons of artificial intelligence.

A. BRANCHES OF AI:

Logical AI: What a program knows about the world in general the facts of the specific situation in which it must act, and its goals are all represented by sentences of some mathematical logical language. The program decides what to do by inferring that certain actions are appropriate for achieving its goals.

Search: AI programs often examine large numbers of possibilities, e.g. moves in a chess game or inferences by a theorem proving program. Discoveries are continually made about how to do this more efficiently in various domains.

Pattern recognition: When a program makes observations of some kind, it is often programmed to compare what it sees with a pattern. For example, a vision program may try to match a pattern of eyes and a nose in a scene in order to find a face. More complex patterns, e.g. in a natural language text, in a chess position, or in the history of some event are also studied. These more complex patterns require quite different methods than do the simple patterns that have been studied the most.

Representation: Facts about the world have to be represented in some way. Usually languages of mathematical logic are used.

Inference: From some facts, others can be inferred. Mathematical logical deduction is adequate for some purposes, but new methods of *non-monotonic* inference have been added to logic since the 1970s. The simplest kind of non-monotonic reasoning is default reasoning in which a conclusion is to be inferred by default, but the conclusion can be withdrawn if there is evidence to the contrary. For example, when we hear of a bird, we man infer that it can fly, but this conclusion can be reversed when we hear that it is a penguin. It is the possibility that a conclusion may have to be withdrawn that constitutes the non-monotonic character of the reasoning. Ordinary logical reasoning is monotonic in that the set of conclusions that can the drawn from a set of premises is a monotonic increasing function of the premises.

Common sense knowledge and reasoning: This is the area in which AI is farthest from human-level, in spite of the fact that it has been an active research area since the 1950s. While there has been considerable progress, e.g. in developing systems of non-monotonic reasoning and theories of action.

Learning from experience: Programs do that. The approaches to AI based on connectionism and neural nets specialize in that. There is also learning of laws expressed in logic. Programs can only learn what facts or behaviors their formalisms can represent, and unfortunately learning systems are almost all based on very limited abilities to represent information.

Planning: Planning programs start with general facts about the world (especially facts about the effects of actions), facts about the particular situation and a statement of a goal. From these, they generate a strategy for achieving the goal. In the most common cases, the strategy is just a sequence of actions.

Epistemology: This is a study of the kinds of knowledge that are required for solving problems in the world.

Ontology: Ontology is the study of the kinds of things that exist. In AI, the programs and sentences deal with various kinds of objects, and we study what these kinds are and what their basic properties are.

Heuristics: A heuristic is a way of trying to discover something or an idea imbedded in a program. The term is used variously in AI. *Heuristic functions* are used in some approaches to search to measure how far a node in a search tree seems to be from a goal. *Heuristic predicates*

that compare two nodes in a search tree to see if one is better than the other, i.e. constitutes an advance toward the goal, may be more useful.

Genetic programming: Genetic programming is a technique for getting programs to solve a task by mating random Lisp programs and selecting fittest in millions of generations.

B.PROS OF ARTIFICIAL INTELLIGENCE:

(1) Finds applications in space exploration.   (2) used for mining purposes. (3) The intelligence of machines can be harnessed for exploring the depths of oceans.(4) used in real world. (5) Capable of performing critical tasks. (6) We might be able to employ them for dangerous missions, thus minimizing the risk to human life.

C.CONS OF AI:

(1) robots start replacing human resources in every field. (2) we will have to deal with serious issues like unemployment in turn leading to mental depression. (3) poverty and crime in the society crop up. (4) Human beings deprived of their work life may not find any means to channelize their energies and harness their expertise. (5) replacing human beings with robots in every field may not be a right decision as many jobs require human touch. (6)One of the major disadvantages of intelligent machines is that they cannot be human.   (7) There won't be dedication and devotion in their work.

D: APPLICATIONS OF AI:

HEAVY INDUSTRIES AND SPACE:

Robotics and cybernetics have taken a leap combined with artificially intelligent expert systems. An entire manufacturing process is now totally automated, controlled and maintained by a computer system in car manufacture, machine tool production, computer chip production and almost every high-tech process. They carry out dangerous tasks like handling hazardous radioactive materials. Robotic pilots carry out complex manoeuvring techniques of unmanned space crafts sent in space. Japan is the leading country in the world in terms of robotics research and   use.

FINANCE: Banks use intelligent software applications to screen and analyze financial data. Softwares that can predict trends in the stock market have been created which have been known to   beat   humans   in   predictive   power.

COMPUTER SCIENCE:

Researchers in quest of artificial intelligence have created spin offs like dynamic programming, object oriented programming, symbolic programming, intelligent storage management systems and many more such tools. The primary goal of creating an artificial intelligence still remains a distant dream but people are getting an idea of the ultimate path which could lead to it.

AVIATION:

Air lines use expert systems in planes to monitor atmospheric conditions and system status. The plane can be put on auto pilot once a course is set for the destination.

WEATHER FORECAST:

Neural networks are used for predicting weather conditions. Previous data is fed to a neural network which learns the pattern and uses that knowledge to predict weather patterns.

SWARM INTELLIGENCE:

This is an approach to, as well as application of artificial intelligence similar to a neural network. Here, programmers study how intelligence emerges in natural systems like swarms of bees even though on an individual level, a bee just follows simple rules. They study relationships in nature like the prey-predator relationships that give an insight into how intelligence emerges in a swarm or collection from simple rules at an individual level. They develop intelligent systems by creating agent programs that mimic the behavior of these natural systems! Is artificial Intelligence really possible? Can intelligence like a human mind surpass itself and create its own image? The depth and the powers of the human mind are just being tapped. Who knows, it might be possible, only time can tell! Even if such intelligence is created, will it share our sense of morals and justice, will it share our idiosyncrasies? This will be the next step in the evolution of intelligence.

PROBLEMS WITH THE CURRENT METHODS:

Artificial intelligence tools can be used to assess individual patient risk in cardiovascular disease. The pitfalls in the current method are as follows:

1) **Inability to capture disease complexity**:

The algorithms currently used employ a limited number of variables. This is due to the fact that traditional statistical approaches tend to select only variables which have a high level of linear correlation with the outcome variable. Classical multivariable statistical techniques are based on

a statistical approach, by which only one factor at a time is varied, and the other factors are held constant. With these techniques, a given set of potential predictors with respect to individual patients is difficult to interpret.

2) **Inability to capture process dynamics**:

A major drawback of the probabilistic approach is that prediction tends to behave as a static process. If a given subject has an absolute risk of 62%, it means that there is a 62% probability that he/she will suffer from a major cardiovascular event in the following 10 years, and a 38% probability that he/she will not. The lottery of probability will tell us the truth in the future. In this situation the subject is in a static position in one out of two mutually excluding possibilities: event or non event. There is no possibility to make any sort of inference about a specific risk trend, despite the fact that the same sort of assessment performed 10 years before resulted in an absolute risk of 34%. In fact, even if after 10 years the algorithm shows that there are more probabilities that the subject will suffer from an event, the imposition of binary logic does not allow the mathematical figuring out of a formal and dynamic progression of the risk. The subject will still remain uncertain and apparently his/her fate will still depend on chance. The use of fuzzy logic with artificial intelligence, and the consequent use of a "plausibility" rather than a probability concept, can help overcoming this subtle trap.

3) **Wide confidence interval of individual risk assessment**:

A major unavoidable pitfall of the translation of group statistics onto an individual level is linked to the problem of the wide confidence interval of classifications. Within classical statistical approaches the individual is assimilated into a subgroup of individuals who have, on average, a given probability of an event.

III.PROPOSED WORK

This paper mainly concentrates in letting people know that for all the problems they suffer in the field of medicine there is a remedy. Nowadays people suffer a lot with respect to cardiovascular disease which leads to the drastic increase in the mortality rate. Thus one of the applications of computer science being artificial intelligence solves all these problems and helps in accessing individual patient risk. There seems to be many applications of AI but it is the tools in artificial intelligence makes it possible to overcome the drawbacks and achieve excellence in the field of implementation. Researchers in quest of artificial intelligence have created spin offs like

dynamic programming, object oriented programming, symbolic programming, intelligent storage management systems and many more such tools. The primary goal of creating an artificial intelligence still remains a distant dream but people are getting an idea of the ultimate path which could lead to it. This paper lets us know what are the uses and applications of AI in various fields and especially in the field of medicine which is briefly discussed in this paper.

IV.APPLICATIONS IN OTHER FIELDS

- ❖ Automation.
- ❖ Cybernetics.
- ❖ Hybrid intelligent system.
- ❖ Intelligent agent.
- ❖ Intelligent control.
- ❖ Automated reasoning.
- ❖ Data mining.
- ❖ Behavior-based robotics.
- ❖ Cognitive robotics.
- ❖ Developmental robotics.
- ❖ Knowledge representation
- ❖ Defence

AI can do the following:

Nowadays artificial intelligence is being used extensively in defense, medical and research. With the help of artificial intelligence systems doctors are able to diagnose and operate on a human being without any complications. It's a modern world and everything is being interconnected with computer. Thus people can buy anything from any corner of the world. There are machines which perform human being work like washing dishes, making coffee, cooking, talking on phone etc. Most of the companies prefer their work to be automated instead of manual thus minimizing human labor and also errors.

A machine once embedded with AI technology will generate proper report when compared to a human being with emotions. AI systems have to be checked before getting released. If an AI

system is released with worm it can have a devastating effect on the network.Artificial intelligence would not need any sleep. This would be an advantage because it would not be interrupted from its tasks for sleep, as well as other issues that plague biological minds like restroom   breaks. Unemotional consideration of problems. While an artificial mind could theoretically have emotions, it would be better for performance if it were programmed for unemotional reasoning. When people make decisions, sometimes those decisions are based on emotion rather than logic. This   is   not   always   the   best   way   to   make   decisions. Easier copying. Once an artificial mind is trained in a task, that mind can then be copied very easily,.

V. FUTURE ENHANCEMENT

With this development pitfalls in other areas of medicine can be rectified. This discovery can be kept as a base and more and more improvements can be made which will make the field of AI a very popular one. It will also lead to more interest of researchers to develop new and innovative ideas.

VI. CONCLUSION

This paper "Importance of Artificial Intelligence Tools" gives us a solution in improving the drawbacks in current methods in the field of medicine. With the development in the field of AI and it being used in various applications more and more research has to be done so that drawbacks in various fields can be rectified.

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