"REVIEW ON THE USE OF ARTIFICIAL INTELLIGENCE IN LIVING LIFE"

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Abstract : Artificial intelligence has been used in a wide range of fields including medical diagnosis, stock trading, robot control, law, scientific discovery and toys. However, many AI applications are not perceived as AI: "A lot of cutting edge AI has filtered into general applications, often without being called AI because once something becomes useful enough and common enough it's not labelled AI anymore. Many thousands of AI applications are deeply embedded in the infrastructure of every industry. In the late 90s and early 21st century, AI technology became widely used as elements of larger systems, but the field is rarely credited for this successes.

Keyword: Artificial intelligence, software

I.INTRODUCTION

Artificial intelligence (AI) is the intelligence of machines. Artificial Intelligence is the study of how to make computers do things at which, at the moment, people are better. Artificial Intelligence textbooks define the field as "the study and design of intelligent agents" where an intelligent agent is a system that perceives its environment and takes actions that maximize its chances of success. John McCarthy, who coined the term in 1956, defines it as "the science and engineering of making intelligent machines." AI research is highly technical and specialized, deeply divided into subfields that often fail in the task of communicating with each other. Subfields have grown up around particular institutions, the work of individual researchers, the solution of specific problems, longstanding differences of opinion about how AI should be done and the application of widely differing tools. The central problems of AI include such traits as reasoning, knowledge, planning, learning, communication, perception and the ability to move and manipulate objects. Artificial intelligence has been used in a wide range of fields including medical diagnosis, stock trading, robot control, law, scientific discovery and toys. However, many AI applications are not perceived as AI: "A lot of cutting edge AI has filtered into general applications, often without being called AI because once something becomes useful enough and common enough it's not labelled AI anymore. Many thousands of AI applications are deeply embedded in the infrastructure of every industry. In the late 90s and early 21st century, AI technology became widely used as elements of larger systems, but the field is rarely credited for this successes. In the 21st century artificial intelligence (AI) has become an important area of research in virtually all fields: engineering, science, education, medicine, business, accounting, finance, marketing, economics, stock market and law, among others.

II. AN OVERVIEW OF THE AI FIELD

On a very broad account the areas of artificial intelligence are classified into sixteen categories (Becker et al. (2000), Singer et al. (2000), Chen and Van Beek (2001)). These are: reasoning, programming, artificial life, belief revision, data mining, distributed AI, expert systems, genetic algorithms, systems, knowledge representation, machine learning, natural language understanding, neural networks, theorem proving, constraint satisfaction, and theory of computation. These descriptions only account for a selected number of areas.

2.2.1. Reasoning

The first major area considered here is that of reasoning. Research on reasoning has evolved from the following dimensions: case-based, non-monotonic, model, qualitative, automated, spatial, temporal and common sense. For an illustrative example, the case-based reasoning (CBR) is briefly discussed. In CBR, a set of cases stored in a case base is the primary source of knowledge. Cases represent specific experience in a problem-solving domain, rather than general rules. The main activities when solving problems with cases are described in the case-based reasoning cycle. This cycle proposes the four steps: relieve, reuse, revise and retain. First, the new problem to be solved must be formally described as a case (new case). Then, a case that is similar to the current problem is retrieved from the case base. The solution contained in this retrieved case is reused to solve the new problem with a new solution obtained and presented to the user who can verify and possibly revise the solution. The revised case (or the experience gained during the case-based problem solving process) is then retained for future problem solving. Detailed information on "dimensions" or how they are related could be obtained from the relevant sources listed in the references (Debruyne and Bessiere (2001), Halpern (2000), Halpern (2001), Renz and Nebel (2001), Singh et al. (2002) and Straccia (2001)).

2.2.2 Genetic algorithm

The second major area of AI treated here is Genetic Algorithm (GA). This is a search algorithm based on the mechanics of natural selection and natural genetics. It is an iterative procedure maintaining a population of structures that are candidate solutions to specific domain challenges. During each generation the structures in the current population are rated for their effectiveness as solutions, an don the basis of these evaluations, a new population of candidate structures is formed using specific genetic operators such as reproduction, cross over and mutation.

2.2.3. Expert system

The third aspect of AI discussed here is expert system. An expert system is computer software that can solve a narrowly defined set of problems using information and reasoning techniques normally associated with a human expert. It could also be viewed as a computer system that performs at or near the level of a human expert in a particular field of endeavour.

2.2.4. Natural language understanding

Natural language generation (NLG) systems are computer software systems that produce texts in English and other human languages, often from non-linguistic input data. NLG systems, like most AI systems, need substantial amounts of knowledge that is difficult to

2.2.5. Knowledge representation (KR)

Knowledge bases are used to model application domains and to facilitate access to stored information. Research on KR originally concentrated around formalisms that are typically tuned to deal with relatively small knowledge base, but provide powerful reasoning services, and are highly expressive.

III. APPLICATIONS

The various applications of AI is discussed below at glance.

3.1 COMPUTER SCIENCE

AI researchers have created many tools to solve the most difficult problems in computer science. Many of their inventions have been adopted by mainstream computer science and are no longer considered a part of AI. According to Russell & Norvig (2003), all of the following were originally developed in AI laboratories:

- Time sharing
- Interactive interpreters
- Graphical user interfaces and the computer
- mouse
- Rapid development environments
- The linked list data type
- Automatic storage management

3.2 FINANCE

Banks use artificial intelligence systems to organize operations, invest in stocks, and manage properties. In August 2001, robots beat humans in a simulated financial trading competition.

3.3 MEDICINE

A medical clinic can use artificial intelligence systems to organize bed schedules, make a staff rotation, and provide medical information. Artificial neural networks are used as clinical decision support systems for medical diagnosis, such as in Concept Processing technology in EMR software.

3.4 HEAVY INDUSTRY

Robots have become common in many industries. They are often given jobs that are considered dangerous to humans. Robots have proven effective in jobs that are very repetitive which may lead to mistakes or accidents due to a lapse in concentration and other jobs which humans may find degrading. Japan is the leader in using and producing robots in the world. In 1999, 1,700,000 robots were in use worldwide. For more information, see survey[5] about artificial intelligence in business.

3.5 ONLINE AND TELEPHONE CUSTOMER SERVICE

Artificial intelligence is implemented in automated online assistants that can be seen as avatars on web pages.[6] It can avail for enterprises to reduce their operating and training cost. A major underlying technology to such systems is natural language processing.

Similar techniques may be used in answering machines of call centres, such as speech recognition software to allow computers to handle first level of customer support, text mining and natural language processing to allow better customer handling, agent training by automatic mining of best practices from past interactions, support automation and many other technologies to improve agent productivity and customer satisfaction.

3.6 TRANSPORTATION

Fuzzy logic controllers have been developed for automatic gearboxes in automobiles (the 2006 Audi TT, VW Touregand VW Caravell feature the DSP transmission which utilizes Fuzzy logic, a number of Škoda variants (Škoda Fabia) also currently include a Fuzzy Logic based controller).

3.7 TELECOMMUNICATIONS

Many telecommunications companies make use of heuristic search in the management of their workforces, for example BT Group has deployed heuristic search in a scheduling application that provides the work schedules of 20,000 engineers.

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3.8 AVIATION

The use of artificial intelligence in simulators is proving to be very useful for the Air Operations Division AOD. Airplane simulators are using artificial intelligence in order to process the data taken from simulated flights. Other than simulated flying, there is also simulated aircraft warfare. The computers are able to come up with the best success scenarios in these situations. The computers can also create strategies based on the placement, size, speed, and strength of the forces and counter forces. Pilots may be given assistance in the air during combat by computers. The artificial intelligent programs can sort the information and provide the pilot with the best possible maneuvers, not to mention getting rid of certain maneuvers that would be impossible for a sentient being to perform. Multiple aircraft are needed to get good approximations for some calculations so computer simulated pilots are used to gather data. These computer simulated pilots are also used to train future air traffic controllers.

3.9 OTHER

Various tools of artificial intelligence are also being widely deployed in homeland security, speech and text recognition, data mining, and e-mail spam filtering. Applications are also being developed for gesture recognition (understanding of sign language by machines), individual voice recognition, global voice recognition (from a variety of people in a noisy room), facial expression recognition for interpretation of emotion and non verbal queues. Other applications are robot navigation, obstacle avoidance, and object recognition

IV. FUTURE SCOPE

In the next 10 years technologies in narrow fields such as speech recognition will continue to improve and will reach human levels. In 10 years AI will be able to communicate with humans in unstructured English using text or voice, navigate (not perfectly) in an unprepared environment and will have some rudimentary common sense (and domain-specific intelligence).

We will recreate some parts of the human (animal) brain in silicon. The feasibility of this is demonstrated by tentative hippocampus experiments in rats. There are two major projects aiming for human brain simulation, CCortex and IBM Blue Brain.

There will be an increasing number of practical applications based on digitally recreated aspects human intelligence, such as cognition, perception, rehearsal learning, or learning by repetitive practice.

The development of meaningful artificial intelligence will require that machines acquire some variant of human consciousness. Systems that do not possess self-awareness and sentience will at best always be very brittle. Without these uniquely human characteristics, truely useful and powerful assistants will remain a goal to achieve. To be sure, advances in hardware, storage, parallel processing architectures will enable ever greater leaps in functionality. But these systems will remain mechanistic zombies. Systems that are able to demonstrate conclusively that they possess self awareness, language skills, surface, shallow and deep knowledge about the world around them and their role within it will be needed going forward.

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