

# Strengths and weaknesses of artificial intelligence computer science



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This research paper gives a short introduction to the basics of robotics in the context of artificial intelligence. Artificial Intelligence is a branch of computer science concerned with making computers behave like humans. This paper describes some bad effects that can happen in the future due to the influence of artificial intelligence.

## INTRODUCTION

Now in the society, we are living on a world of machines. We depend on machines for every field of our life. Everything around us are applications of artificial intelligence. Air conditioners, cameras, video games, medical equipment , were traffic lights, refrigerators, etc work on a “ smart” technology . Artificial Intelligence isA a branch of computer science that works on to create a computer systems capable to react like a human being. That is to make machines capable of sensing the world around it, to understand conversations and to take decisions as a human would . Computers have more computational power than the human brain Now, computers are millions of times faster than they were fifty years ago. Human brains seem to be far “ faster” than computers for a wide variety of tasks. Still, greater computational speed does make some so-called Artificial Intelligent systems seem smarter

Artificial intelligence (AI) have a great role in the field of robotics. Artificial Intelligence in robotics covers topics like natural language processing, design, human factors, and computing theory. Natural language processing, a subfield of Artificial Intelligence, provides computers with the understanding they require to handle information being encoded by humans.

Computer vision instructs computers on how to comprehend images and scenes. It has as some of its goals: image recognition, image tracking and image mapping. This application is valued in the fields of medicine, security, surveillance, military operations, even movie-making.

Since the beginnings of civilization man has had a fascination for a human-like creation that would assist him. Robotics and machines come to existence from this logic Artificial Intelligence to the Hollywood generation is mostly about androids, humanoids and robots. It is about machines going out of control, replacing humanity and world domination. There is a chance of happening this situation in future due to the influence of Artificial Intelligence.

#### WHAT IS AN INTELLIGENT MACHINE

When we say intelligent machine it does not mean that it is a machine which can solve any complex program that even humans get troubled. Calculators are not intelligent. Calculators give the right answers to challenging math problems, but everything they “ know” is preprogrammed by people. They can never learn anything new. Calculators are able to solve problems entirely because

people are already able to solve those same problems.

We have generated many computing devices that can solve mathematical problems of enormous complexity, but those were not actually intelligent. They are preprogrammed to do exactly what we want them to do. They accept input and generate the correct output. They may do it at blazingly

fast speeds, but their underlying mechanisms depend on humans having already worked out how to write the programs that control their behavior. An intelligent machine is a machine that does not have any preprogrammed data in it to solve a problem. We can also say that it is a machine which have an ability to think

## ARTIFICIAL INTELLIGENCE AND ROBOTICS

The most famous of all uses for artificial intelligence systems is robotics. A Robotics is the study and development of robots Applications of artificial intelligence with robotics have taken into account in many Hollywood films. From the android Data in Star Trek, to C3PO in Star Wars, people have been engaged in science fiction with countless numbers of computerized robots. In today's world, those types of robots are still fictional. However even today we use robots in countless applications. The automation of many assembly lines now, we use robots. For example, many auto manufacturers now employ the use of robots in many jobs which require a large amount of strength.

Robots have developed a lot by the last 50 years.

Robots now can ' see', sense, move and manipulate, executing complex and precise tasks at very high speeds. They have come a long way from the manufacturing field. Robotics have made a lot of progress with the influence of artificial intelligence. Today's AI machines can replicate some specific elements of intellectual ability. Now with the help of artificial intelligence robotics is trying to create machines that will have the ability to learn just

about anything, the ability to reason, the ability to use language and the ability to formulate original ideas.

Computers can already solve problems in limited realms. The basic idea of artificial intelligence problem solving is very simple, though its execution is complicated. First, the robot or computer with artificial intelligence gathers facts about a situation through sensors or human input. The computer compares this information to stored data and decides what the information signifies. The computer runs through various possible actions and predicts which action will be most successful based on the collected information. But, the computer can only solve problems which it is programmed to solve. It will not have any generalized analytical ability. Chess computers are one example of this sort of machine.

Some modern robots also have the ability to learn in a limited capacity. Learning robots recognize if a certain action (moving its legs in a certain way, for instance) achieved a desired result (navigating an obstacle). The robot stores this information and attempts the successful action the next time it encounters the same situation. Humanoid robots are one example of this application. Again, modern computers can only do this in very limited situations. They can't absorb any sort of information like a human can. Some robots can learn by mimicking human actions.

Some robots can interact socially. Kismet, a robot at M. I. T's Artificial Intelligence Lab, recognizes human body language and voice inflection and responds appropriately. Kismet's creators are interested in how humans and

babies interact, based only on tone of speech and visual cue. This low-level interaction could be the foundation of a human-like learning system.

Kismet and other humanoid robots at the M. I. T. artificial intelligence Lab operate using an unconventional control structure. Instead of directing every action using a central computer, the robots control lower-level actions with lower-level computers. The program's director, Rodney Brooks, believes this is a more accurate model of human intelligence. We do most things automatically and we don't decide to do them at the highest level of consciousness. For example we are not using our highest level of consciousness for closing our eyelids.

Artificial Intelligence has made it possible to interact with computers by using speech instead of writing by the application of computer speech recognition. The advantages of computer speech recognition can be seen in the Hollywood film 'IRON MAN'.

## ARTIFICIAL INTELLIGENCE AND MEDICINE

Artificial intelligence has a great influence in the field of medicine. We will be able to get the treatment even if the doctor is not present. By taking the advances of sophisticated robotics and taking the advantages of computer vision and signal process technologies in artificial intelligence doctors will be able to direct robots remotely to treat patients. Computer vision instructs computers on how to comprehend images and scenes. It has as some of its goals: image recognition, image tracking and image mapping. This application is very valued in the fields of medicine, security, surveillance, military operations, even movie-making.

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Since we are using robots for treating they will not get tired and will be more precise and accurate with their treatment. For example, robots will be more accurate with stitching than a human doctor can do.

Many soldiers have got killed in battle fields and have died because of not getting enough medical support. Machines with artificial intelligence can be sent to battle fields for treating the soldiers. Machines with artificial intelligence can be sent even in a space station or places humans cannot get very easily.

## ARTIFICIAL INTELLIGENCE AND NANOTECHNOLOGY

Even though nanotechnology and artificial intelligence are two different fields, there are so many researches working on with the application of artificial intelligence in nanotechnology. Many progresses can be made by joining together the artificial intelligence and nanotechnology. Artificial Intelligence could be boosted by nanotechnology innovations in computing power. Applications of a future nanotechnology general assembler would require some AI and robotics innovations.

Nanotechnology with the help of artificial intelligence and robotics is working on to create micro machines which can change the face of the world. There are so many applications for this if these small nanobots came to exist. They can be used in every important field of our life. They can be used in the field of medicine for treatment. They can be injected to the body with the medicine and will heal the disease.

Nanotechnology with artificial intelligence can be used in the field of military for increasing the effect and develop defensive shields. Today there is still no shield that can deflect a nuclear explosion; nations are protected not by defenses that cancel offenses, but by a balance of offensive terror. The developments in this field can save the lives of many on wars.

An unFriendly AI with molecular nanotechnology (or other rapid infrastructure) need not bother with marching robot armies or blackmail or subtle economic coercion. The unFriendly AI has the ability to repattern all matter in the solar system according to its optimization target.

## ARTIFICIAL INTELLIGENCE AND EDUCATION

Artificial Intelligence have a great role in the field of education. Computers have been used in education for over 20 years. Intelligent tutoring systems have been shown to be highly effective in increasing student motivation and learning. Computer-based training (CBT) and computer aided instruction (CAI) were the first such systems deployed as an attempt to teach using computers. In these kinds of systems, the instruction was not individualized to the learner's needs. Instead, the decisions about how to move a student through the material were script-like, " if question 21 is answered correctly, proceed to question 54; otherwise go to question 32." The learner's abilities were not taken into account in this type of learning system. Even though both Computer-based training (CBT) and computer aided instruction (CAI) effective in helping learners, they do not provide the same kind of individualized attention that a student would receive from a human tutor. For a computer based educational system to provide such attention, it must



reason about the domain and the learner. This prompted research in the field of intelligent tutoring systems (ITSs). ITSs offer considerable flexibility in presentation of material and a greater ability to respond to student needs. These systems achieve their “intelligence” by representing educational decisions about how to teach as well as information about the learner. This allows for greater flexibility by altering the system’s interactions with the student. Intelligent tutoring systems have been shown to be highly effective at increasing student’s performance and motivation.

## ARTIFICIAL INTELLIGENCE AND GAMING

Video games have gone through drastic improvements in the past ten years. Game artificial intelligence refers to techniques used in a computer and video game to produce the illusion of intelligence in the behavior of a non-player character. Artificial intelligence in games is usually used for creating player’s opponents. The high-level strategic orders by the player are taken care of by the artificial intelligence of computer. Video games seem to get twice as complex in some ways every year. As these games get more complex they also get more interesting and engaging.

They are becoming an artistic form of expression for

the programmers and developers. Strategy games like “Warcraft 3” call for users to create an army to defeat one or more computer-controlled villages with armies of their own. These villages will form alliances, scout surrounding areas, and plan appropriate battle plans to do their best to be the last village standing. “The Sims” has reinvented artificial life in gaming. The game

starts with the user controlling one person. Eventually the character may  
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marry and then the user can have children in the game. These “ people” are wonders of artificial intelligence. They all have their individual characteristics, wants, and needs. They have the ability to fall in love, make friends, enemies, become hermits, strive for more in life, etc, and will act on their feelings at will. So, we can see that artificial intelligence have a great application in the field of gaming

### Artificial Intelligence - Current Usage

There are many applications of artificial intelligence at present.

Banks and other financial institutions rely on intelligent software, which provide accurate analysis of the data and helps make predictions based upon that data. Stocks and commodities are being traded without any human interference - all thanks to the intelligent systems. Artificial intelligence is used for weather forecasting. It is used by airlines to keep a check on its system. Robotics is the greatest success story, in the field of artificial intelligence. Spacecrafts are send by NASA and other space organizations into space, which are completely manned by robots. Even some manufacturing processes are now being completely undertaken by robots. Robots are being used in industrial processes, that are dangerous to human beings, such as in nuclear power plants. Usage of artificial intelligence is quite evident in various speech recognition systems, such as IBM ViaVoice software and Windows Vista.

### ARTIFICIAL INTELLIGENCE POSITIVE APPLICATIONS IN FUTURE

It is believed that Artificially Intelligent computers will be obviously used in the field of education. Furthermore, in the medical field scientists are speculating the development of intelligent computers that will be immune to viruses. So there will be a future with no disease.

Even now we can see small applications of artificial intelligence in our home. For example, smart television, smart refrigerator etc. In the future better applications of Artificial intelligence will be seen in every home in the future. Artificial Intelligence with nanotechnology or other technologies may give rise to new fields in the area of science. Machines may get more sophisticated and will be the companion of man. For certain, the development of artificial intelligence will increasingly make it a part of our daily life.

#### ARTIFICIAL INTELLIGENCE BAD EFFECTS IN FUTURE

If there is a fair side there will be a negative side also. Even though artificial intelligence is having many advantages applications there are so many risky disadvantages also.

At a more basic level, the use of artificial intelligence in everyday tasks might produce laziness on the part of humans. A The awareness that the machines have intelligence will make human to be lazy and will be forced to make everything done by the machines. Humans have an extraordinary ability to think, analyze, and use judgment. A If artificial intelligence is used for interpreting, then the human mind and its capabilities might go to waste.

Scientific Films today represents the developments that can happen on the future. The most of the scientific films on artificial intelligence represents the negative side of artificial intelligence. For example if we take film ' I ROBOT' as example, it represents a robot going mad against society and becoming a trait to the humanity. There are many Hollywood films representing the same idea. Films like ' TERMINATOR' also represent the robots with artificial intelligence going mad against the humanity.

Applications of artificial intelligence with nanotechnology in military field have many positive advantages like , to develop a perfect defensive shield to any attacks. However, it have a danger side also. With the help of artificial intelligence and nanotechnology we will be able to develop very powerful and destructive weapons. In the Hollywood film ' G. I. JOE' the weapons made by the application of nanotechnology and artificial intelligence is shown

If we give intelligence to machines, they will be able to utilize it in its maximum extend. And machines with intelligence will become more intelligent than its creators. So, there will be a chance of humanity under control machines.

In future there may be more types of robots with artificial intelligence. Applications of artificial intelligence in military field will gave rise to more sophisticated and user friendly warfares. By the invention of artificial intelligence scientists will be able to prove that human intelligence is purely mechanical and can be duplicated. If this happens, it would break man's view of himself as a unique being. The future artificially intelligent machines

can become even more intelligent than humans. By that, there will be a situation of man vs machines like we see in scientific fiction films.

Computers are more capable of producing accurate results. So, they will potentially replace humans in jobs that are better suited for them. A This could mean that the workplace will no longer be man's domain. A Unemployment rates could go up. A Humans could soon lose their ground as dominant creature. A Most critical of possibilities is complete destruction of the human race

Moreover, by the fast developments in the areas of artificial intelligence and robotics may push earth to a critical state. Even now the wastes of computer parts and other electronic devices are making a great disturbance to our nature and earth. In future our planet Earth may go to black from green due to the pollution that can happen by the development of artificial intelligence.

## CONCLUSION

Technology is neither good nor bad. It never has been. Artificial Intelligence is a field in which so many researches are going on. Artificial Intelligence is the subfield of computer science concerned with understanding the nature of intelligence and constructing computer systems capable of intelligent action. Even though, humans are having intelligence they are not able to use it to the maximum extent. Machines will be able to use 100% of its intelligence if we gave them intelligence. It is an advantage as well as a disadvantage. We depend on machines for almost every application in life. Machines are now a part of our life and are used commonly. So, we must know more about

machines and should be aware of the future that can happen if we give them  
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intelligence. Artificial Intelligence cannot be as bad or good. It varies in the way we utilize and use it.