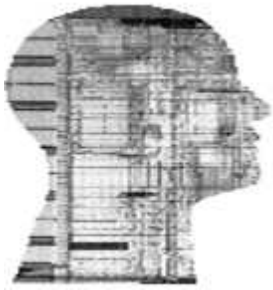
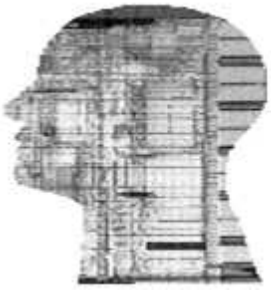
ARTIFICIAL INTELLIGENCE

Contents

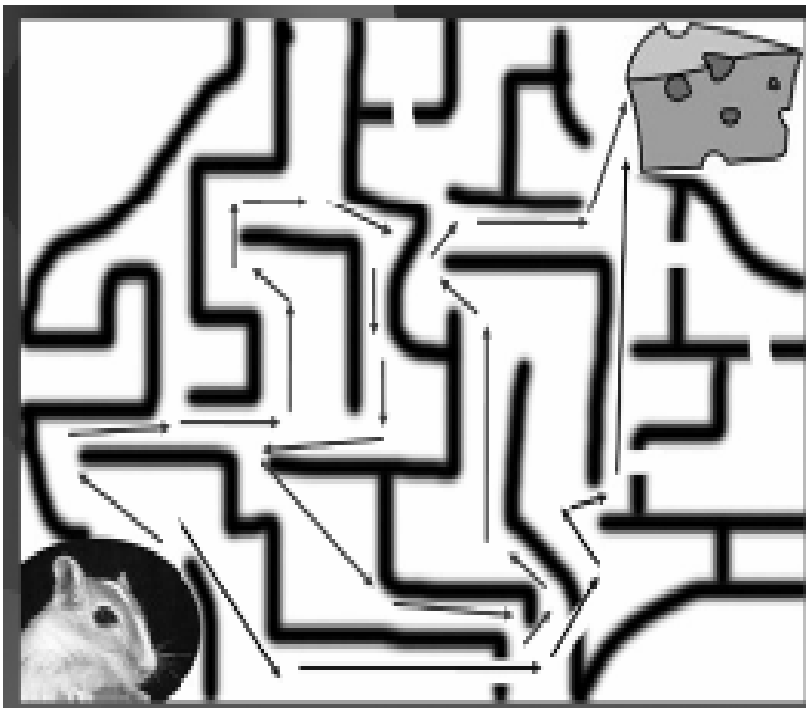


WHAT IS INTELLIGENCE..?



The ability of problem solving demonstrates intelligence

Consider a mouse trying to search/reach the piece of cheese placed at right top corner of the image.



This problem can be considered as a common real life problem which we deal with many times in our life, i.e. finding a path, may be to a university, to a friends house, to a market, or in this case to the piece of cheese.

The mouse tries various paths as shown by arrows and can reach the cheese by more than one path. In other words the mouse can find more than one solutions to this problem. We can say that the mouse is intelligent enough to find a solution to the problem.

Hence the ability of problem solving demonstrates intelligence.

Intelligence is the computational part of the ability to achieve goals in the world. Varying kinds and degrees of intelligence occur in people, many animals and some machines.

The doctor collects some knowledge about the patient by asking some questions and measuring temperature (T), Blood Pressure (BP), Pulse Rate (PR) etc. Then based on his previous knowledge he tries to diagnose the disease. He use his own brain to diagnosis the disease.

His previous knowledge is based on rules like: “If the patient has a high BP and normal T and normal PR then he is not well”. It is important to consider here that a doctor who would have a better memory to store all this precious knowledge, better ability of retrieving the correct portion of the knowledge for the correct patient, will be better able to classify a patient. Hence, telling us that good memory, good recall, and efficient memory and information manipulation also comes in intelligence. Some people might think that the people around 4ft are short, around 5ft are medium, and around 6ft are tall. Others might say that the people around 4.5ft are short, around 5.5ft are medium and around 6.5ft are tall. Even having the same measurements, different people can get completely different results because they approach the problem in different fashions. Things can be even more complex when the same person, having observed same measurements and solves the same problem in two different ways and reaches different solutions.

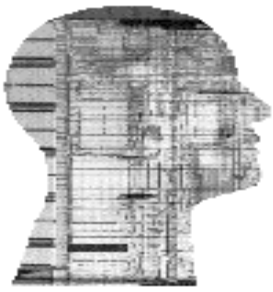
We all know that we answer such fuzzy questions very efficiently in our daily lives. Our intelligence actually helps us to do this. Hence the ability to tackle ambiguous and fuzzy problems demonstrates intelligence.

In simple words the intelligence is the Capabilities like thinking, memory manipulation (storing, recalling), on numerical processing, and decision making.

Find the next number in the sequence given below:

0, 4, 8, 12,16…..

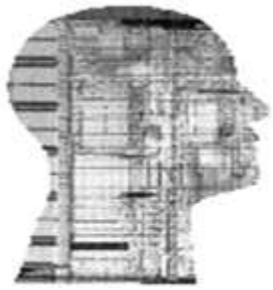
The next number is obviously 20 but is achieved through thinking, memory recalling, numerical processing, and decision making. This is Intelligence.



Artificial Intelligence

Artificial Intelligence, or AI for short, is a combination of computer science, physiology, and philosophy. AI is a broad topic, consisting of different fields, from machine vision to expert systems. The element that the fields of AI have in common is the creation of machines that can "think".

Artificial Intelligence (AI) is the area of computer science focusing on creating machines that can engage on behaviors that humans consider intelligent. The ability to create intelligent machines has intrigued humans since ancient times and today with the advent of the computer and 50 years of research into AI programming techniques, the dream of smart machines is becoming a reality. Researchers are creating systems which can mimic human thought, understand speech, beat the best human chess player, and countless other feats never before possible. Find out how the military is applying AI logic to its hi-tech systems, and how in the near future Artificial Intelligence may impact our lives.



DEFINITIONS OF A.I.

1. The exciting new effort to make computers think… machines with minds, in the full and literal sense" (Haugeland, 1985).
2. [The automation of] activities that we associate with human thinking, activities such as decision making, problem solving, learning …" (Bellman, 1978).
3. "The study of mental faculties through the use of computational models" (Charniak and McDermott).
4. The study of computation that makes it possible to perceive reason and act" (Winston 1992).
5. "The art of creating machines that performs functions that require intelligence when performed by people" (Kurzweil 1990).
6. The study of how to make computers do things at which, at the moment, people are better" (Rich and Knight, 1991).

7. “A field of study that seeks to explain and emulate intelligent behavior in terms of computational processes” (Schalkoff, 1990).
8. “The branch of computer science that is concerned with the automation of intelligent behavior” (Luger and Stubblefield, 1993).

THINKING HUMANLY:

- To make computers think like human we need a way of determining how human think. For this we need to get inside the actual functioning of the human mind.

- There are two ways to do this: (i) through introspection - trying to catch out our own thoughts as they go by. And (ii) through psychological experiments: that concern with the activities of brain.

- Once we have a precise theory of mind, it becomes possible to express the theory as a computer program that follows the same rules.

- The interdisciplinary field of cognitive science brings together computer models from AI and experimental techniques from psychology to try to construct precise and testable theories of the working of human mind.

ADVANTAGES OF A.I.

We have been studying this issue of AI application for quite some time now and know all the terms and facts. But what we all really need to know is what we can do to get our hands on some AI today. How can we as individuals use our own technology? We hope to discuss this in depth (but as briefly as possible) so that you the consumer can use AI as it is intended.

First, we should be prepared for a change. Our conservative ways stand in the way of progress. AI is a new step that is very helpful to the society. Machines can do jobs that require detailed instructions followed and mental alertness. AI with its learning capabilities can accomplish those tasks but only if the worlds conservatives are ready to change and allow this to be a possibility. It makes us think about how early man finally accepted the wheel as a good invention, not something taking away from its heritage or tradition.

Secondly, we must be prepared to learn about the capabilities of AI. The more use we get out of the machines the less work is required by us. In turn less injuries and stress to human beings. Human beings are a species that learn by trying, and we must be prepared to give AI a chance seeing AI as a blessing, not an inhibition.

Finally, we need to be prepared for the worst of AI. Something as revolutionary as AI is sure to have many kink to work out. There is always that fear that if AI is learning based; will machines learn that being rich and successful is a good thing, then wage war against economic powers and famous people? There are so many things that can go wrong with a new system so we must be as prepared as we can be for this new technology.

However, even though the fear of the machines are there, their capabilities are infinite Whatever we teach AI, they will suggest in the future if a positive outcome arrives from it. AI is like children that need to be taught to be kind, well mannered, and intelligent. If they are to make important decisions, they should be wise. We as citizens need to make sure AI programmers are keeping things on the level. We should be sure they are doing the job correctly, so that no future accidents occur.

- Many information retrieval systems like Google search engine uses artificially intelligent crawlers and content based searching techniques.
- A lot of computer based games like chess, 3D combat use intelligent software to make the user feel as if the machine on which that game is running were intelligent.
- Natural language processing is another area which tries to make machines speak and interact with humans just like humans themselves. This requires a lot from the field of Artificial Intelligence.

ROBOTICS AND A.I.

Artificial intelligence (AI) is arguably the most exciting field in robotics. It's certainly the most controversial: Everybody agrees that a robot can work in an assembly line, but there's no consensus on whether a robot can ever be intelligent.

Like the term "robot" itself, artificial intelligence is hard to define. Ultimate AI would be a recreation of the human thought process -- a man-made machine with our intellectual abilities. This would include the ability to learn just about anything, the ability to reason, the ability to use language and the ability to formulate original ideas. Roboticists are nowhere near achieving this level of artificial intelligence, but they have made a lot of progress with more limited AI. Today's AI machines can replicate some specific elements of intellectual ability.

Computers can already **solve problems** in limited realms. The basic idea of AI problem-solving is very simple, though its execution is complicated. First, the AI robot or computer 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. Of course, the computer can only solve problems it's programmed to solve -- it doesn't 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. 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. In Japan, roboticists have taught a robot to dance by demonstrating the moves themselves.

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. AI 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; we don't decide to do them at the highest level of consciousness.

"The Humanoid Robot"

The real challenge of AI is to understand how natural intelligence works. Developing AI isn't like building an artificial heart -- scientists don't have a simple, concrete model to work from. We do know that the brain contains billions and billions of neurons, and that we think and learn by establishing electrical

connections between different neurons. But we don't know exactly how all of these connections add up to higher reasoning, or even low-level operations. The complex circuitry seems incomprehensible.

Because of this, AI research is largely theoretical. Scientists hypothesize on how and why we learn and think, and they experiment with their ideas using robots. Brooks and his team focus on humanoid robots because they feel that being able to experience the world like a human is essential to developing human-like intelligence. It also makes it easier for people to interact with the robots, which potentially makes it easier for the robot to learn.

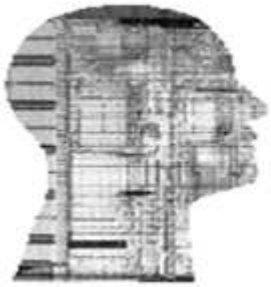
Just as physical robotic design is a handy tool for understanding animal and human anatomy, AI research is useful for understanding how natural intelligence works. For some roboticists, this insight is the ultimate goal of designing robots. Others envision a world where we live side by side with intelligent machines and use a variety of lesser robots for manual labor, health care and communication. A number of robotics experts predict that robotic evolution will ultimately turn us into cyborgs -- humans integrated with machines. Conceivably, people in the future could load their minds into a sturdy robot and live for thousands of years!

In any case, robots will certainly play a larger role in our daily lives in the future. In the coming decades, robots will gradually move out of the industrial and scientific worlds and into daily life, in the same way that computers spread to the home in the 1980s.

The best way to understand robots is to look at specific designs. The links on the next page will show you a variety of robot projects around the world.

All robot control architectures are built on some ideas of Artificial Intelligence.

Robotics is one branch of artificial intelligence.



AUTOMATION AND A.I.

Automation is the use of control systems and information technologies to reduce the need for human work in the production of goods and services. In the scope of industrialization, automation is a step beyond mechanization. Whereas mechanization provided human operators with machinery to assist them with the muscular requirements of work, automation greatly decreases the need for human sensory and mental requirements as well. Automation plays an increasingly important role in the world economy and in daily experience.

Artificial Intelligence in Man-Machine Systems and Automation

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1. Introduction

An interesting aspect of the history of mankind is the relationship between man and technology. Technological innovations have had a great influence on human society. A first technological revolution (the agricultural revolution) began with the invention of simple tools, like axes and ploughs. Man learned to use these tools in a manual control loop. He developed particular skills, and subsequently specialization and worksharing began. The effect on society was enormous: The early society of hunters and gatherers transformed into a society of farmers and craftsmen. The development of speech and writing enabled man to codify his skills in the form of rules, and to generalize these rules in the form of knowledge about the tools and their application to the world. The invention of printing made the wide-spread distribution of knowledge possible.

A second technological revolution (the industrial revolution) began with the invention of the steam-engine, which initiated the industrialization of the world. The use of machines gave man the role of a supervisor and monitor of semiautomatic processes. These functions were more based on rules and knowledge than on particular physical skills. An important by-product of this evolution was, that man developed "mental models" of the processes and machines under his control. These models are symbolic representations of his knowledge about the machines and their interaction with the world. More and more skill-based labour was done by machines instead of men. Our industrial society is the product of this development.

A third technological revolution is just going on. It is brought about by the information processing technology and especially by the inventions of artificial intelligence (AI) and knowledge engineering*). These technologies make it possible to implement cognitive capabili-

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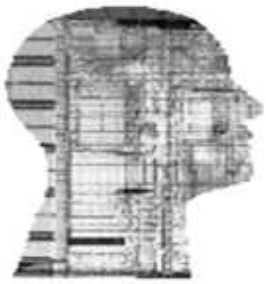
*)A good introduction to AI is [15]



A.I. IN VIRTUAL WORLD

While we already deal with some virtual AI -- notably in action games against computer-controlled "bots" or challenging a computer opponent to chess -- the work of Novamente, Electric Sheep Company and other firms has the potential to initiate a new age of virtual AI, one where, for better or worse, humans and artificial intelligences could potentially be indistinguishable.

If you think about it, we take in numerous pieces of information just walking down the street, much of it unconsciously. You might be thinking about the weather, the pace of your steps, where to step next, the movement of other people, smells, sounds, the distance to the destination, the effect of the environment around you and so forth. An artificial intelligence in a virtual world has fewer of these variables to deal with because as of yet, no virtual world approaches the complexity of the real world. It may be that by simplifying the world in which the artificial intelligence operates (and by working in a self-contained world), some breakthroughs can be achieved. Such a process would allow for a more linear development of artificial intelligence rather than an attempt to immediately jump to lifelike robots capable of learning, reason and self-analysis.

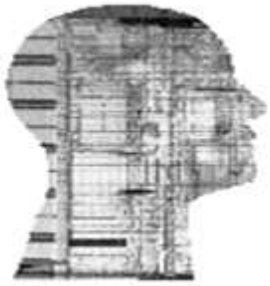
Goertzel states that a virtual world also offers the advantage of allowing a newly formed artificial intelligence to interact with thousands of people and characters, increasing learning opportunities [source: PC World]. The virtual body is also easier to manage and control than that of a robot. If an AI-controlled parrot seems to have particular challenges in a game world, it's less difficult for programmers

to create another virtual animal than if they were working with a robot. And while a virtual world AI lacks a physical body, it displays more complexity (and more realism) than a simple AI that merely carries on text-based conversations with a human.

Novamente claims that its system is the first to allow artificial intelligences to progress through a process of self-analysis and learning [source: Novamente]. The company hopes that its AI will also distinguish itself from other attempts at AI by surprising its creators in its capabilities -- for example, by learning a skill or task that it wasn't programmed to perform. Novamente has already created what it terms an "artificial baby" in the AGISim virtual world [source: Novamente]. This artificial baby has learned to perform some basic functions.

Despite all of this excitement, the AI discussed here are far from what's envisioned in "Terminator." It will be some time before AIs are seamlessly interacting with players, impressing us with their cleverness and autonomy and seeming all too human. Even Philip Rosedale, the founder of Linden Labs, the company behind "Second Life," has warned against becoming caught up in the hype of the supposedly groundbreaking potential of these virtual worlds [source: CNET News].

But "Second Life" and other virtual worlds may prove to be the most valuable testing grounds to date for AI. It will also be interesting to track how virtual artificial intelligences progress as the virtual worlds they occupy change and become more complex. Besides acting as an incubator for artificial intelligence, "Second Life" has already been an important case study in the development of cyber law and the economics and legality of hawking virtual goods for real dollars. The popular virtual world has even been mentioned as a possible virtual training facility for children taking emergency preparedness classes.



COMPUTER AND BRAIN

Computers do many things very well. They can perform complex calculations, and the fastest computers can crunch trillions of numbers each second. Humans make calculations in a way similar to digital computers. The human prefrontal cortex and basal ganglia appear to have two states similar to the binary systems in a computer .

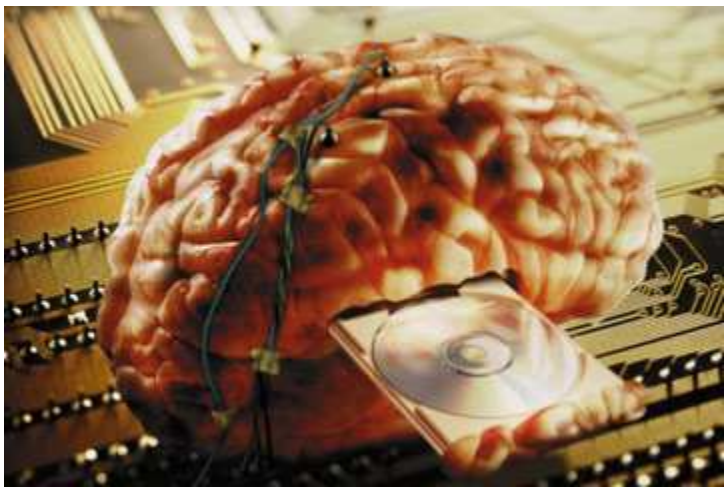
Computers are also good at storing and retrieving information. Assuming the computer and its components remain undamaged and uncorrupted, you should be able to retrieve information years after storing it in a computer with no loss of data. Computers don't forget facts or exaggerate.

But computers aren't good at everything. While it's true that the supercomputer Deep Blue defeated chess master Garry Kasparov in a 1997 rematch, computers in general still have trouble against accomplished human chess opponents. One reason for that is because humans are very good at adapting to changing situations. Computers traditionally have trouble responding to a player switching his or her style in the middle of a match .

Humans are also better at learning through observation and experimentation. There are computers and software that mimic this ability. But in general, it's difficult to build a computer or program that lets a machine learn through experience. Most are limited to a specific set of parameters. Humans are capable of learning multiple disciplines.

Other elements of the brain have remained elusive to computer scientists. Things like emotion, self-awareness, ambition and self-preservation all rest within our brains. Computers don't experience these concepts. While we can create programs that mimic the human responses to stimuli like heat or pressure, machines don't actually feel anything.

Even though a computer isn't a good model for the brain on its own, that hasn't stopped computer scientists and neurologists from trying to build an electronic brain simulation. Scientists working on the Blue Brain project are trying to build a computer model of the human brain. The goal is to reverse engineer the brain so that we can further our understanding of how it works. A working simulation could provide neurologists with information on how to treat various illnesses and conditions.



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Could a simulated brain start to think, feel and experience the world as if it were an organic, human brain? It's impossible to say for certain, but it's not likely simply because the brain is such a complex organ. It's also not the goal of the Blue Brain project -- the scientists there don't expect or desire to create an artificially intelligent entity. As the scientists point out, there are easier ways to create human intelligence -- you just make more humans. But even so, the simulated brain will be a much closer fit to the gray matter in our skulls than a traditional computer.

AN INTELLIGENT SYSTEM HELPS ELDERLY OR MEMORY-IMPAIRED TO REMEMBER EVERYDAY TASKS

A team of researchers from the University of Granada (UGR) has created a system with Artificial Intelligence techniques which notifies elderly people or people with special needs of the forgetting of certain everyday tasks. This system uses sensors distributed in the environment in order to detect their actions and mobile devices which remind them, for example, to take their keys before they leave home.

An elderly lady is about to go to bed. She goes into her room, sits down on the bed, takes off her slippers and turns off the light. Suddenly, before getting into bed, a small alarm goes off and a mobile device reminds her that she has not taken her tablets.

This is how the new intelligent system developed by researchers from the Department of Computer Science and Artificial Intelligence of the UGR works. María Ros Izquierdo is from

the Higher Technical School of Computer Engineering of the UGR and the co-author of a study which is published this month in the *Expert Systems with Applications* magazine. "It is a prototype which, in a non-intrusive manner, facilitates the control of the activity of people with special needs and increases their independence", she explained to SINC.

The system recognizes the everyday actions of the users by means of RFID (Radio Frequency Identification) labels. These labels are discreetly placed on the objects that the individuals touch most often, in such a way that, when they do so, a signal is sent to a computer or mobile device situated in the house itself or at an assistance centre some distance away.

The activities of the people are assessed with Artificial Intelligence techniques (data mining and formal grammar) in order to compile a list of actions such as remembering to take the keys or the mobile phone before leaving home. "It is not necessary to use cameras or microphones, and the devices which are used do not entail any technological complications for users, nor do they modify their daily routines", clarified Ros.

In order to evaluate the system, the scientists have designed a Tagged World, an intelligent space which simulates the rooms of a house, with sensors embedded in the environment which help to recognize the behaviour of its occupants. The researchers monitored each user so as to obtain an individualized database. They later verified with a test the reliability of the system and the degree of intrusion felt by the participants.

"The system does not modify the life of the users, but does positively modify that of the people who look after them", indicated Ros, who recalled that elderly people or those with special needs often reject the aid of others and demand more independence. The new system may help to achieve this objective.

How new artificial intelligence can help us understand how we see

Queen Mary scientists have, for the first time, used computer artificial intelligence to create previously unseen types of pictures to explore the abilities of the human visual system.

Writing in the journal Vision Research, Professor Peter McOwan, and Milan Verma from Queen Mary's School of Electronic Engineering and Computer Science report the first published use of an artificial intelligence computer program to create pictures and stimuli to use in visual search experiments.

They found that when it comes to searching for a target in pictures, we don't have two special mechanisms in the brain - one for easy searches and one for hard - as has been previously suggested; but rather a single brain mechanism that just finds it harder to complete the task as it becomes more difficult.

The team developed a 'genetic algorithm', based on a simple model of evolution, that can breed a range of images and visual stimuli which were then used to test people's brain performance. By using artificial intelligence to design the test patterns, the team removed any likelihood of predetermining the results which could have occurred if researchers had designed the test pictures themselves.

The AI generated a picture where a grid of small computer-created characters contains a small 'pop out' region of a different character. Professor Peter McOwan, who led the project, explains: "A 'pop out' is when you can almost instantly recognise the 'different' part of a picture, for example, a block of Xs against a background of Os. If it's a block of letter Ls against a background of Ts that's far harder for people to find. It was thought that we had two different brain mechanisms to cope with these sorts of cases, but our new approach shows we can get the AI to create new sorts of patterns where we can predictably set the level of difficulty of the 'spot the difference' task."

Milan Verma added: "Our AI system creates a unique range of different shapes that run from easy to spot differences, to hard to spot differences, through all points in between. When we then get people to actually perform the search task, we find that the time they take to perform the task varies in the way we would expect."

This new AI based experimental technique could also be applied to other experiments in the future, providing vision scientists with new ways to generate custom images for their experiments.

FOOTBALL PLAYING ROBOT

ScienceDaily (Sep. 13, 2010) — The new Premier League season has begun and in Madrid the World Cup celebrations are barely over, yet according to research in *WIREs Cognitive Science* the world's best players may soon be facing a new challenge from football playing robots, which their creators claim will be able to play and beat a human team. The research

reveals how building robots to play football is driving the development of artificial intelligence and robotic technology which can be used for roles including search and rescue and home help.

The author, Claude Sammut, from the ARC Centre of Excellence for Autonomous Systems in Sydney, reviewed the technology demonstrated at the RoboCup international robot soccer competition which this year took place in Singapore. Competitions have become a popular way for motivating innovations in robotics and provide teams of scientists with a way of comparing and testing new methods of programming artificial intelligence (AI).

"Football is a useful task for scientists developing robotic artificial intelligence because it requires the robot to perceive its environment, to use its sensors to build a model of that environment and then use that data to reason and take appropriate actions," said Sammut. "On a football pitch that environment is rapidly changing and unpredictable requiring a robot to swiftly perceive, reason, act and interact accordingly."

As with human players football also demands communication and cooperation between robotic players and crucially requires the ability to learn, as teams adjust their tactics to better take on their opponents.

Aside from football the competition also includes leagues for urban search and rescue and robotic home helpers which take place in areas simulating collapsed buildings and residential homes, revealing the multiple use of this technology.

While a football pitch layout is structured and known in advance, a search and rescue environment is highly unstructured and so the competition's rescue arena presents developers with a new set of challenges. On the football pitch the robots are able to localize and orientate themselves by recognising landmarks such as the goal post, yet in a rescue situation such localization is extremely difficult, meaning that the robot has to simultaneously map its environment while reacting and interacting to the surroundings.

In the home help competitions the robot is programmed to recognise appliances and landmarks which will be common in most homes, but in addition to orientating themselves they must react and interact with humans.

As the robotic technology continues to develop the rules of the competitions are altered and made harder to encourage innovation, it is the organisers' aim that this will drive the technology to a level where the football playing robots could challenge a human team.

"In 1968 John McCarthy and Donald Michie made a bet with chess champion David Levy that within 10 years a computer program could beat him," concluded Sammut. "It took a bit longer but eventually such programs came into being. It is in that same spirit of a great challenge that RoboCup aims, by the year 2050, to develop a team of fully autonomous robots that can win against the human world soccer champion team."

So while, for the moment, football players can focus on beating each other to lift silverware, tomorrow they may be facing a very different challenge.

5 senses and A.i.

Still needs a human to interpret the readings

It even sounds like a really bad name for a Motown group. Might even be a name for an iPod hooked up to a surround sound audio system, except the 5

speakers only involve hearing and feeling. You don't see, smell or taste the sound waves that they generate.

One can argue that we have made some great strides in using technology to enhance the 5 senses, especially in the area of sight. Telescopes, long distance lenses and optical scanning technology have made some major advances and the far-reaching distance that they provide goes well beyond the range of the human eye. We do make better and better sight enhancements like contact lenses, multi-focal glasses and even lasik eye surgery.

But in all technology, one element is still present. There is a human operator that ends up interpretting or manipulating the findings for use by other human beings. I can't see any way of replacing human beings and I wouldn't care to live in that world. Today's world is "cold and boring" enough with all the accountants, politicians and bottom-line businessmen out there. A so-called itelligent being is yet to be even remotely developed in the world of technology.

Dogs can hear sound that humans cannot but what would it matter if you developed audiology equipment to hear those ranges? We can't hear them. Maybe for veterinarians there would be a suitable application to test a dog's hearing. But how would you know if the dog actually heard that high frequency or it just wanted attention? We do make better and better hearing aids.

Has anybody developed anything that can detect the difference in smell of bacon being cooked over beef roasting? What about a device to tell whether the food item tastes bitter, sweet, sour, tart, salty, dry, wet, moist, etc? And what about the device that says this object is hard, soft, smooth, rough, sharp, dull, grainy, solid, hollow, etc?

So many of the senses are subjective and open to individuals own ideas of what they sense. So here is another technology that is yet to be discovered and that is individuality. You would need a lot of knobs, sliders, potentiometers, gauges and readouts to even begin to get close to what goes on in a human body in "sensing" anything. In all cases, the ultimate measure of how well any of these new technologies work is the individual human brain.

And there is one that technology has a long way to go to even begin considering it is past the diaper stage. The computer is really nothing more than a very efficient storage device and

calculator. It is a very welcome addition since as you get older you are swamped with more and more information and need off-line storage to assist the over-stuffed pea that we have for a brain.

So the one thing I don't see coming along real well in technology is creativity, originality and ingenuity. Pretty much all technology depends on human beings deciding what it will do. So for my money, I look at technology as an assist for the human race and never as a replacement for anything human. So technology, just bring on the better tools and we will figure out what we will do with them. What would be original or genuine about artificial intelligence anyway?

The Internet is a pretty good example of technology in practice. Everyday, human beings are making it do stuff that the original designers never even thought would be possible. Technology discovers nothing on it's own. Human beings are the one's that do that task.

WHAT IS THE DIFFERENCE BETWEEN THE ARTIFICIAL INTELLIGENCE AND ROBOTICS?

Artifical Intelligence:Artificial intelligence (AI) is both the intelligence of machines and the branch of computer science which aims to create it. OR
It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable.
Intelligence is the computational part of the ability to achieve goals in the world. Varying kinds and degrees of intelligence occur in people, many animals and some machines

Robotics: the area of AI concerned with the practical use of robots OR Robotics is the science and technology of robots, their design, manufacture, and application. Robotics requires a working knowledge of electronics, mechanics and software, and is usually accompanied by a large working knowledge of many subjects. A person working in the field is a roboticist.
Robotics is one branch of artificial intelligence

What is the difference between human intelligence and artificial intelligence?

People are often confused in thinking that AI's sole purpose is to be AH (artifically human). Intelligence is simply making the best choice. It has nothing to do with art, music, creativity or emotions. People think AI is in the future but its been done many times. Anytime a machine makes "human decisions" its AI. It directs traffic, installs software without asking you 100 questions, it can fly planes on autopilot, and has even explored other planets. But that still isnt AH.

The best example is in games. People often complain that the AI sucks but what they really want is AH (artificially human). Going from one spot on a map to another is easy for an AI. Its a straight line, go around the obstacles. But if that is your opponent in a game then players quickly exploit it. They want it to choose straight line, or flanking movement, or a fake direct action with a move up the side, and even a small random chance of a totally stupid action except that sometimes it might work.

Most AI applications do not need to come close to being human. They only need to know the intelligent choices and pick the best one without picking a stupid one. For AH projects (art, music, games, anything creative) its kindof a giggle to AI programmers that to get close to human you need to dump more and more of the "intelligent" part and work with more and more randoms. So I guess the answer to your question is that Artificial Intelligence only tries to be intelligent, while humans dump some of the intelligence in orde

r to be creative.