DOWNLOAD PDF ROBOTS (HOW AND WHY)

Chapter 1 : Pepper the robot tells politicians why robots' time is upon us - CNET

Robot A Czech word roughly meaning 'drudge worker', from the play 'R.U.R.: Rossums's Universal Robots' by the Bohemian writer Karel Capek. It has since become an inspiration for many science fiction writers but also engineers.

See the Top 10 Questions What are Robots? Robotics is the science and study of robots. What do Robots do? Imagine if your job was to tighten one screw on a toaster. And you did this over and over again on toaster after toaster, day after day, for weeks, months, or years. This kind of job is better done by robots than by humans. Most robots today are used to do repetitive actions or jobs considered too dangerous for humans. A robot is ideal for going into a building that has a possible bomb. Robots are also used in factories to build things like cars, candy bars, and electronics. Robots are now used in medicine, for military tactics, for finding objects underwater and to explore other planets. Robotic technology has helped people who have lost arms or legs. Robots are a great tool to help mankind. A brief history Robots seem like a modern day invention, but in reality evidence suggests that automations were created for everything from toys to parts for religious ceremonies in ancient Greece and Rome. Leonardo da Vinci sketched plans for a humanoid robot in the late s. Jacques de Vaucanson was famous in the 18th century for his automated human figure that played the flute and for a duck that could flap its wings. Many automated inventions that could behave in similar fashion to a human have been documented throughout history. Most were created largely for entertainment purposes. Fiction writers found great success in writing about robots in all sorts of situations which meant that the robot was part of daily conversation and imagination. By the s robots were introduced into the General Motors automobile plant in New Jersey for moving car parts around. Robots continued to develop and can now be found in homes as toys, vacuums, and as programmable pets. Today robots are a part of many aspects of industry, medicine, science, space exploration, construction, food packaging and are even used to perform surgery. Watson, a robot with artificial intelligence from IBM, defeated the human players in an episode of Jeopardy. So Why Use Robots? The reason robots are used is that it is often cheaper to use them over humans, easier for robots to do some jobs and sometimes the only possible way to accomplish some tasks! Robots can explore inside gas tanks, inside volcanoes, travel the surface of Mars or other places too dangerous for humans to go where extreme temperatures or contaminated environments exist. Robots can also do the same thing over and over again without getting bored. There are a lot of benefits to using robots. Parts of a Robot Robots can be made from a variety of materials including metals and plastics. Most robots are composed of 3 main parts: Often, the program is very detailed as it give commands for the moving parts of the robot to follow. These parts are usually powered by air, water, or electricity. Sensors allow the robot to determine sizes, shapes, space between objects, direction, and other relations and properties of substances. Many robots can even identify the amount of pressure necessary to apply to grab an item without crushing it. All of these parts work together to control how the robot operates. Nanorobots Nano-robots or nanobots are robots scaled down to microscopic size in order to put them into very small spaces to perform a function. Currently nanobots are still in the developmental stage. Future nanobots could be placed in the blood stream to perform surgical procedures that are too delicate or too difficult for standard surgery. Nanobots could fight bacteria by tracking down and eliminating each bacterial cell or could repair individual organ cells in the body. Imagine if a nanobot could target cancer cells and destroy them without touching healthy cells nearby. Nanobots would probably carry medication and surgical tools on board. They would need to be able to navigate through the human body and then find their way out too. Nanobots could be used in other situations too. Tiny nanobot gears and tools could allow construction of objects at the tiniest of scale. Some of the things we only imagine in science fiction could one day be reality. Maybe you will one day be a scientist who works with nanobots. Artificial Intelligence Artificial intelligence is also known as machine intelligence or AI for short. Some computers and robots have been given the opportunity to act with human-like behavior. Face recognition software, complicated scheduling software, or computer games that give players a response based on the players actions are all forms of artificial intelligence. The goal for AI was, at one time, to recreate the intelligence of a human being. At the present time, insect intelligence is the focus of research and development because insects and

their behavior are easier to mimic. Nanobots could be based on insect behavior, working in swarms together to perform a function. Some robots and computers have been given the ability to learn and to use information from previous activities to make future decisions. This science is in the early stages, but robots are being developed that can make decisions in order to serve food, translate words from one language to another, and get information from outside resources to solve problems. Robot Limitations Unlike in the movies, Robots are unable to think or make decisions; they are only tools to help us get things done. Robots are machines with programed movements that allow them to move in certain directions or sequences. Click on a Topic:

Chapter 2 : BBC - Future - The dangers of trusting robots

Better Than Human: Why Robots Will â€" And Must â€" Take Our Jobs Baxter is an early example of a new class of industrial robots created to work alongside humans. Imagine that 7 out of 10 working.

They currently employ around robots and are actively developing their own robots for specific applications. It is interesting to note that most of the companies that use robots well within their manufacturing areas also develop and build their own robots. This is probably due to them having personnel available with a deep understanding of how these complex machines operate as well as having a vested interest in the technology being successful. Many failures of this technology in the UK have been caused by the operators not buying into the project or not being sufficiently well trained to be capable of running the equipment. Quality improvements For certain tasks robots can be superior to humans in terms of the quality of the work that is produced. This has been found to be the case where one or more of the following are required: No deviation due to fatigue. Highly accurate inspection and measurement using sensors. These process improvements not only improve the visual appearance of the product and hence the perceived quality of the product but in terms of the spot welding give better welds due to the tighter control of the gun angle and higher strength joints due to the guaranteed spacing and number of the welds. For seam sealing the better accuracy in terms of positioning and the tighter control of the bead diameter allow less sealant to be applied while still assuring that the joint is sealed. This improves the appearance of the joint considerably and gives a major saving in material use and therefore cost. Similar improvements can be achieved for paint spraying, arc welding, assembly and many other operations. An example of how robots can be linked with sensors to perform inspections is the Nissan painted surface inspection system. This uses laser lighting to detect any dust or dirt causing imperfections in the finished paint work of the car. In areas where high levels of concentration are required over long periods fatigue in humans can be a problem. The correct use of robots can eliminate this. Improvement of the Working Environment In order to get the best long term performance from the work force it is important to make the working environment as conducive as possible to high quality, high output work. The human body if used incorrectly is susceptible to short term fatigue or long term injury or disability. Where possible automation should be used to reduce fatigue and to minimise the risk of injury. With the current trend of increased health and safety legislation it is predicted that companies that do not see the sense in introducing automation in these areas voluntarily will in the long term be forced to by legislation. The four areas where automation should be considered are as follows: Guide lines quoted by Yamauchi show that where the total weight lifted per shift exceeds 20 tons or the number of repetitions of a single action per shift exceed then Nissan would consider that those tasks should be automated. An example of where this has been applied is in mounting wheels onto car bodies where wheels weighing Kg are handled times per shift. A robot has been developed using both vision and tactile sensors to pick up the wheels and mount them correctly onto the hub. Examples of repetitive tasks are palletising of pressed or injection moulded parts. Many jobs within the manufacturing industry take place in an environment that is hostile to the human body. Many organic solvents from paint spraying are known to be carcinogenic, press shops are noisy and can cause hearing damage and foundries and welding shops are generally hot and dusty with danger of injury from sparks and hot components. Robots can easily handle these environments with no danger to themselves in fact one of the largest research areas in robotics at this moment in time is for decommissioning nuclear power stations and performing repairs within existing reactors. Obviously the environment here precludes the use of humans and much of the work requires very intelligent robots with a large range of sensors. As well as physical work being tiring jobs requiring high levels of concentration can also lead to mental fatigue and stress. The surface inspection task described earlier is a prime example of this. Cost Effectiveness Cost effectiveness of robots is not always an easy calculation to perform. Most of the cost is up front in terms of the robot and tooling costs. Often due to the lack of intelligence in robots the tooling costs are the most significant. In comparison to this performing the operations using humans the largest cost is in wages and for hazardous environments such as a paint shop, environmental control i. Where possible robots should be installed such that they can operate

continuously for 24 hours per day in order to get the best productivity from them. This is however not possible where they are operating on lines utilising humans who require breaks. Often it is the humans in the process who limit the output of robot cells. Flexibility to Change In the correct circumstances robots can not only be more flexible to change than fixed automation but can also be faster than what is often regarded as the most flexible solution humans. With the globalisation of markets the life time of a product on the market is steadily decreasing. This requires that new products can be brought to market quicker and also that production lines are flexible and can handle more than one product. The solution to this is to use re-programmable automation and wherever possible to remove hard tooling. The old process involved coating the components in maskant and then manually scribing the maskant using a scalpel and a template before peeling off the relevant areas of maskant and etching way the correct amount of metal. The scribing process is now performed using a robot programmed off-line using CAD data. This eliminates the need for the templates to be made. A number of other benefits have been gained by the use of a robot for this application the main one being that the quality of the resulting components has increased. Nissan are looking to take the concept of flexible manufacturing to the limit. The aim of it is to be able to produce any one of their car models on the same assembly line. The way that they are planning to achieve this is by using simple robots to replace fixturing. In order to produce such a complex robotic cell they are using computer based simulation techniques and off-line programming.

Chapter 3 : Robotics: Facts (Science Trek: Idaho Public Television)

Robots have become an integral part of the manufacturing industry, but they're also moving into other industries as well. As they continue to become a larger part of our society, people are voicing growing fears about them.

Messenger Scientists are known for making dramatic predictions about the future â€" and sinister robots are once again in the spotlight now that artificial intelligence has become a marketing tool for all sorts of different brands. At the end of World War Two, it was stated that flying cars were just around the corner and that all energy problems would be solved by fusion energy by the end of the 20th century. Pessimists predict that robots will jeopardise jobs across the globe, and not only in industrial production. They claim robot journalists, robot doctors and robot lawyers will replace human experts. And, as a consequence of a melting down middle class , there will be mass poverty and political instability. Optimists predict a new paradise where all the tedious problems of human relationships can be overcome by having a perfect life with easily replaceable robot partners, which will fulfil our basic needs as well as our deepest longings. The pessimists, however, can relax and the optimists need to cool their boots. As experts in the field of robotics, we believe that robots will be much more visible in the future, but â€" at least over the next two decades â€" they will be clearly recognisable as machines. This is because there is still a long way to go before robots will be able to match a number of fundamental human skills. Human-like hands Scientists are far from replicating the complexity of human hands. The hands of robots that are used today in real applications are clumsy. The more sophisticated hands developed in labs are not robust enough and lack the dexterity of human hands. Comparison of a human hand with a robotic one. Wikimedia , CC BY 2. Tactile perception There is no technical match for the magnificent human and animal skin that encompasses a variety of tactile sensors. This perception is required for complex manipulation. Also, the software that processes the input from the sensors in robots is nowhere near as sophisticated as the human brain when it comes to interpretation and reaction to the messages received from the tactile sensors. Control of manipulation Even if we had artificial hands comparable to human hands and sophisticated artificial skin, we would still need to be able to design a way to control them to manipulate objects in a human-like way. Human children take years to do this and the learning mechanisms are not understood. Children study modern robots at an exhibition. Human and robot interaction The interaction between humans is built on well-functioning speech and object recognition systems, as well as other sensors such as smell and taste and tactile sensing. A robot offers assistance in a shopping mall. Human reason Not all of what is technically possible needs to be built. Human reason could decide not to fully develop such robots, because of their potential harm to society. If, in many decades from now, the technical problems mentioned above are overcome so that complex human-like robots could be built, regulations could still prevent misuse. The brains have it. These robots will be used to solve repetitive tasks involving human and robot interaction, such as transporting laundry and waste, offering water to people or guiding them to the breakfast table. To address the fourth problem of human and robot interaction, we chose repetitive tasks to reduce complexity, since the expected interactions are â€" to a certain degree â€" predictable. Robots are a reality today in industry and they will appear in public spaces in more complex shapes than robot vacuum cleaners. But in the next two decades, robots will not be human-like, even if they might look like humans. Instead they will remain sophisticated machines. So you can stand down from any fear of a robot uprising in the near future.

Chapter 4 : Five reasons why robots won't take over the world

People need robots for dangerous, repetitive and high-precision work. Robots perform tasks in hostile environments that are impossible for humans, while also carrying out repetitious tasks with speed and accuracy. Without robots, our modern industrialized world would not be possible. The world needs.

Future of robotics Various techniques have emerged to develop the science of robotics and robots. One method is evolutionary robotics , in which a number of differing robots are submitted to tests. Those which perform best are used as a model to create a subsequent "generation" of robots. Another method is developmental robotics , which tracks changes and development within a single robot in the areas of problem-solving and other functions. Another new type of robot is just recently introduced which acts both as a smartphone and robot and is named RoboHon. Robot Operating System is an open-source set of programs being developed at Stanford University , the Massachusetts Institute of Technology and the Technical University of Munich , Germany, among others. It also provides high-level commands for items like image recognition and even opening doors. It would relay this data to higher-level algorithms. Microsoft is also developing a "Windows for robots" system with its Robotics Developer Studio, which has been available since Much technological research in Japan is led by Japanese government agencies, particularly the Trade Ministry. Generally such predictions are overly optimistic in timescale. New functionalities and prototypes In , Caterpillar Inc. In , these Caterpillar trucks were actively used in mining operations in Australia by the mining company Rio Tinto Coal Australia. She can read newspapers, find and correct misspelled words, learn about banks like Barclays, and understand that some restaurants are better places to eat than others. A worker could teach Baxter how to perform a task by moving its hands in the desired motion and having Baxter memorize them. Any regular worker could program Baxter and it only takes a matter of minutes, unlike usual industrial robots that take extensive programs and coding in order to be used. This means Baxter needs no programming in order to operate. No software engineers are needed. This also means Baxter can be taught to perform multiple, more complicated tasks. Sawyer was added in for smaller, more precise tasks. The play does not focus in detail on the technology behind the creation of these living creatures, but in their appearance they prefigure modern ideas of androids , creatures who can be mistaken for humans. These mass-produced workers are depicted as efficient but emotionless, incapable of original thinking and indifferent to self-preservation. At issue is whether the robots are being exploited and the consequences of human dependence upon commodified labor especially after a number of specially-formulated robots achieve self-awareness and incite robots all around the world to rise up against the humans. However, he did not like the word, and sought advice from his brother Josef, who suggested "roboti". Robot is cognate with the German root Arbeit work. Asimov created the " Three Laws of Robotics " which are a recurring theme in his books. These have since been used by many others to define laws used in fiction. The three laws are pure fiction, and no technology yet created has the ability to understand or follow them, and in fact most robots serve military purposes, which run quite contrary to the first law and often the third law. If you read the short stories, every single one is about a failure, and they are totally impractical," said Dr. Joanna Bryson of the University of Bath. Mobile robot and Automated guided vehicle Mobile robots [76] have the capability to move around in their environment and are not fixed to one physical location. An example of a mobile robot that is in common use today is the automated guided vehicle or automatic guided vehicle AGV. An AGV is a mobile robot that follows markers or wires in the floor, or uses vision or lasers. Mobile robots are also found in industry, military and security environments. Mobile robots are the focus of a great deal of current research and almost every major university has one or more labs that focus on mobile robot research. Because of this most humans rarely encounter robots. However domestic robots for cleaning and maintenance are increasingly common in and around homes in developed countries. Robots can also be found in military applications. Industrial robot and Manipulator device A pick and place robot in a factory Industrial robots usually consist of a jointed arm multi-linked manipulator and an end effector that is attached to a fixed surface. One of the most common type of end effector is a gripper assembly. Service robot Most commonly industrial robots are fixed robotic arms

and manipulators used primarily for production and distribution of goods. The term "service robot" is less well-defined. The International Federation of Robotics has proposed a tentative definition, "A service robot is a robot which operates semi- or fully autonomously to perform services useful to the well-being of humans and equipment, excluding manufacturing operations. Educational robotics Robots are used as educational assistants to teachers. From the s, robots such as turtles were used in schools and programmed using the Logo language. Robotics have also been introduced into the lives of elementary and high school students in the form of robot competitions with the company FIRST For Inspiration and Recognition of Science and Technology. Modular robot Main article: Self-reconfiguring modular robot Modular robots are a new breed of robots that are designed to increase the utilization of robots by modularizing their architecture. These robots are composed of a single type of identical, several different identical module types, or similarly shaped modules, which vary in size. Their architectural structure allows hyper-redundancy for modular robots, as they can be designed with more than 8 degrees of freedom DOF. Creating the programming, inverse kinematics and dynamics for modular robots is more complex than with traditional robots. Modular robots may be composed of L-shaped modules, cubic modules, and U and H-shaped modules. These "ANAT robots" can be designed with "n" DOF as each module is a complete motorized robotic system that folds relatively to the modules connected before and after it in its chain, and therefore a single module allows one degree of freedom. The more modules that are connected to one another, the more degrees of freedom it will have. L-shaped modules can also be designed in a chain, and must become increasingly smaller as the size of the chain increases, as payloads attached to the end of the chain place a greater strain on modules that are further from the base. ANAT H-shaped modules do not suffer from this problem, as their design allows a modular robot to distribute pressure and impacts evenly amongst other attached modules, and therefore payload-carrying capacity does not decrease as the length of the arm increases. Modular robots can be manually or self-reconfigured to form a different robot, that may perform different applications. Because modular robots of the same architecture type are composed of modules that compose different modular robots, a snake-arm robot can combine with another to form a dual or quadra-arm robot, or can split into several mobile robots, and mobile robots can split into multiple smaller ones, or combine with others into a larger or different one. This allows a single modular robot the ability to be fully specialized in a single task, as well as the capacity to be specialized to perform multiple different tasks. Modular robotic technology is currently being applied in hybrid transportation, [84] industrial automation, [85] duct cleaning [86] and handling. Many research centres and universities have also studied this technology, and have developed prototypes. Collaborative robots A collaborative robot or cobot is a robot that can safely and effectively interact with human workers while performing simple industrial tasks. However, end-effectors and other environmental conditions may create hazards, and as such risk assessments should be done before using any industrial motion-control application. Intended for sale to small businesses, they are promoted as the robotic analogue of the personal computer. Autonomy and ethical questions Main articles: He calls this " the Singularity ". In , experts attended a conference hosted by the Association for the Advancement of Artificial Intelligence AAAI to discuss whether computers and robots might be able to acquire any autonomy, and how much these abilities might pose a threat or hazard. They noted that some robots have acquired various forms of semi-autonomy, including being able to find power sources on their own and being able to independently choose targets to attack with weapons. They also noted that some computer viruses can evade elimination and have achieved "cockroach intelligence. Researchers at the Rensselaer Polytechnic Institute AI and Reasoning Lab in New York conducted an experiment where a robot became aware of itself, and corrected its answer to a question once it had realised this. However, other experts question this. He believes this represents an important and dangerous trend in which humans are handing over important decisions to machines. Technological unemployment For centuries, people have predicted that machines would make workers obsolete and increase unemployment , although the causes of unemployment are usually thought to be due to social policy. At present the company uses ten thousand robots but will increase them to a million robots over a three-year period. Delaney said "Robots are taking human jobs. List of robots At present, there are two main types of robots, based on their use: Robots can be classified by their specificity of purpose. A robot might be designed to perform one particular task extremely well, or a range of

tasks less well. All robots by their nature can be re-programmed to behave differently, but some are limited by their physical form. For example, a factory robot arm can perform jobs such as cutting, welding, gluing, or acting as a fairground ride, while a pick-and-place robot can only populate printed circuit boards. General-purpose autonomous robots Main article: Autonomous robot General-purpose autonomous robots can perform a variety of functions independently. General-purpose autonomous robots typically can navigate independently in known spaces, handle their own re-charging needs, interface with electronic doors and elevators and perform other basic tasks. Like computers, general-purpose robots can link with networks, software and accessories that increase their usefulness. They may recognize people or objects, talk, provide companionship, monitor environmental quality, respond to alarms, pick up supplies and perform other useful tasks. General-purpose robots may perform a variety of functions simultaneously or they may take on different roles at different times of day. Some such robots try to mimic human beings and may even resemble people in appearance; this type of robot is called a humanoid robot. Humanoid robots are still in a very limited stage, as no humanoid robot can, as of yet, actually navigate around a room that it has never been in. Factory robots Car production Over the last three decades, automobile factories have become dominated by robots. A typical factory contains hundreds of industrial robots working on fully automated production lines, with one robot for every ten human workers. On an automated production line, a vehicle chassis on a conveyor is welded , glued , painted and finally assembled at a sequence of robot stations. Packaging Industrial robots are also used extensively for palletizing and packaging of manufactured goods, for example for rapidly taking drink cartons from the end of a conveyor belt and placing them into boxes, or for loading and unloading machining centers. Electronics Mass-produced printed circuit boards PCBs are almost exclusively manufactured by pick-and-place robots, typically with SCARA manipulators, which remove tiny electronic components from strips or trays, and place them on to PCBs with great accuracy. Mobile robots, following markers or wires in the floor, or using vision [] or lasers, are used to transport goods around large facilities, such as warehouses, container ports, or hospitals. Very little feedback or intelligence was required, and the robots needed only the most basic exteroceptors sensors. The limitations of these AGVs are that their paths are not easily altered and they cannot alter their paths if obstacles block them. If one AGV breaks down, it may stop the entire operation.

Chapter 5 : Why our robots? - Balyo

Why this variance? Because no one can predict accurately exactly all of the jobs that robots and AI will assume from humans over the next few decades. We just don't know where the technology.

By Evan Selinger and Woodrow Hartzog 12 August In February, a South Korean woman was sleeping on the floor when her robot vacuum ate her hair, forcing her to call for emergency help. We are susceptible to telling our deepest, darkest secrets to anthropomorphic robots whose cute faces appear so innocent There are many other examples of intelligent technology gone bad, but more often than not they involve deception rather than physical danger. Malevolent bots, designed by criminals, are now ubiquitous on social media sites and elsewhere online. The mobile dating app Tinder, for example, has been frequently infiltrated by bots posing as real people that attempt to manipulate users into using their webcams or disclosing credit card information. Meanwhile, increasing evidence suggests that we are susceptible to telling our deepest, darkest secrets to anthropomorphic robots whose cute faces may hide exploitative code â€" children particularly so. So how do we protect ourselves from double-crossing decepticons? View image of Even robot vacuum cleaners can go bad Credit: For a monthly subscription, romantic texts and voicemails are sent to your phone from a faux lover. The take-home message is clear: SPL We also need to think long and hard about how information is being stored and shared when it comes to robots that can record our every move. Some recording devices may have been designed for entertainment but can easily be adapted for more nefarious purposes. Advances in robotics may call for the advent of a body responsible for the integration of robotics into society Most people guard their secrets in the presence of a recording device. But what happens once we get used to a robot around the house, answering our every beck and call? We may be at risk of letting our guard down, treating them as extended members of the family. If the technology around us is able to record and process speech, images and movement â€" never mind eavesdrop on our juiciest secrets â€" what will happen to that information? Where will it be stored, who will have access? If our internet history is anything to go by, these details could be worth their weight in gold to advertising companies. If we grow accustomed to having trusted robots integrated into our daily lives, our words and deeds could easily become overly-exposed. View image of As robot tech advances, should we be more cautious? Thinkstock So, what is the safest way to welcome robots into our homes, public spaces, and social lives? We should be cautiously optimistic that these intelligent machines could become enriching companions, while acknowledging that we need to determine strict boundaries for robots capable of deception and manipulation. We might think of expanding the reach of consumer protection agencies or creating new robotic-centric policies. Just as the advent of radio called for the formation of the Federal Radio Commission in the US, advances in robotics may call for the advent of a body responsible for the integration of robotics into society. Someone to turn to should your robot commit a crime , steal your credit cardâ€¦ or try to eat your hair. Evan Selinger is an associate professor in the department of philosophy at the Rochester Institute of Technology. Woodrow Hartzog is an expert in privacy, media, and robotics law at Cumberland School of Law.

Chapter 6 : Why Robotics (Storming Robots)

This engaging approach to learning is the core of Storming Robots' educational philosophy. Children learn by hands-on activities, including designing, building, programming, and last of not least, watching their creation come alive.

For example testing and gauging is often open to human interpretation. Different operators will get differing results. The same has been found to apply in laboratory routines, especially pharmaceutical research where hundreds of sample must be tested with sensitive instruments. Results obtained vary with the operator speed, handling, etc. Applications where the objective has been to save the costs of PhD scientists filling test tubes often yielded more repeatable and accurate results. Today quality no longer means walnut veneer or English leather it means goods which are made without defect, consistent because of tightly controlled manufacturing methods behind which lie controlled design methods and even quality controlled management methods. The proof of this philosophy is in modern volume manufactured goods, boringly the same, but of consistent quality. Low value products can be killed by high labor costs and automation is essential. However robots are not the answer. For applications such as food production, sorting low value items such as screws, and so on, there is little or no impact on quality. The throughput is often extremely high with cycle times of a second or less, requiring very fast and therefore very expensive robots. Yet the applications are simple and very repetitive. For such applications descrete automation is a better solution. In other cases the impact on quality might be the justification in itself, especially where the human operator can easily introduce errors. A human operator is gauging a bearing hole in a motor housing. If the hole is too big the red light comes on and he puts it in basket A. If it is between limits the green light comes on and he puts it in basket B. If the yellow light comes on the hole is too small but may be redrilled so he puts it in basket C. Or worse still skips testing every other one because he is on piece work. Clearly the robot not only saves labour but cuts rejects and will pay for itself in a short time. Ethics There are still many applications where the robot does nothing more than eliminate labor. My own point of view is that many unskilled tasks are so monotonous we should not be asking a human being to do them. The work ethic is greatly over-valued. George Orwell predicted that unemployment would one day be in millions and indeed it is. Perhaps we should be teaching our children more about leisure and less about academic subjects that will never be used either because the jobs these people do are so soul destroying or because the robots are doing them for us. In the words of Bob Dylan: The Greeks were quite right there. Unless there are slaves to do the ugly, horrible, uninteresting work, culture, and contemplation become almost impossible. Human slavery is wrong, insecure, and demoralizing. On mechanical slavery, on the slavery of the machine, the future of the world depends.

Chapter 7 : Robot - Wikipedia

An increasing number of robots are being created and designed to work side by side with humans, in a human environment. That means robots have to be structured like a person, because some of them.

Share on Facebook Robots in antiquity and through the Middle Ages were used primarily for entertainment. However, the 20th century featured a boom in the development of industrial robots. Through the rest of the century, robots changed the structure of society and allowed for safer conditions for labor. In addition, the implementation of advanced robotics in the military and NASA has changed the landscape of national defense and space exploration. Robots have also been influential in the media and profitable for toy manufacturers. The Importance of Robots credit: Al-Jazari built a floating band that resembled humans and performed various songs and drum beats depending on the programming of a series of pegs. It could stand and move its arms and neck, as well as open its mouth. Unimate would lift die-cut metal pieces and stack them for the human workers. This development changed the dynamics of robotics and brought them into the workplace, making them pivotal to a business. Video of the Day Significance Industry has benefited drastically from the expanse of a robotic work force. Automated machines have taken over the duties of dangerous and mundane jobs from humans, allowing greater productivity. Because robots never tire, extra shifts have been added to factories. Farmers have taken advantage of new technology with automated harvesters, the waste disposal industry has implemented robots in some of its dirtier jobs, and the medical industry benefits from advancements in assisted surgical robotics. The idea of a factory with no human workers has come to fruition. IBM runs a "lights off" factory in Texas completely staffed by fully autonomous robots making keyboards. The military has launched various programs in robotic technology, most successfully the Predator and Reaper unmanned aerial reconnaissance vehicles that allow a pilot to control the robot from vast distances. The vehicles can do high-altitude surveillance for long periods without having to support a live pilot, and when needed the planes can launch small strikes on targets in zones that normal aircraft cannot operate. Beyond the factory floor, robots have been instrumental in space exploration and performing other tasks that would be impossible for humans to accomplish. The Mars rovers Spirit and Opportunity lasted years longer than NASA predicted and stayed on the mission far past the time any manned mission could have functioned. The Deep Impact probe that crashed into a comet literally functioned at a capacity impossible for humans. The Chernobyl meltdown site contains radiation levels that would kill any human. As such, the Pioneer robot was developed to enter the remains of the facility to address structural stability. Also, the Dante II was utilized to enter volcanic eruptions, which are impossible for humans to investigate. Considerations Robots have had a long importance in the media, between our fascination with real-life robotics and their fictional counterparts. Robots appeared frequently over the course of the next century in films such as "Forbidden Planet" and television programs like "Star Trek. The characters brought a humanistic attitude to the previously dry image of robots. In modern cinema, robots have portrayed heroes and villains, both elaborately sophisticated and starkly simplistic. The machines featured in "The Terminator" have long held a scary yet fascinating influence over the culture of robotics. Misconceptions Modern robotics are present everywhere in society, from a DVD burner in a computer to the microwave in most American kitchens. The invention of the microprocessor in caused the computerization of virtually every appliance and tool the modern home uses. Toasters and stoves utilize microprocessors that control sensors to reduce the likelihood of fires, while cellular phones implement virtual memory to enhance interaction. Most toy stores now feature hundreds of robots for educational and entertainment use. With the introduction of the "Furby" in the late s, robots with limited artificial intelligence become a boon for the marketplace, generating vast amounts of revenue in simple consumer-ready robotics.

Chapter 8 : Why use a robot?

Japan has landed two hopping robots onto asteroid Ryugu as part of the Hayabusa2 mission. It's Japan's second mission to an asteroid, where it plans to return some samples of Ryugu to Earth by the.

Chapter 9 : Why Robots That Look Too Human Make Some People Uneasy

So Why Use Robots? The reason robots are used is that it is often cheaper to use them over humans, easier for robots to do some jobs and sometimes the only possible way to accomplish some tasks! Robots can explore inside gas tanks, inside volcanoes, travel the surface of Mars or other places too dangerous for humans to go where extreme.