RESEARCH ARTICLE OPEN ACCESS

ALT CARE ROBOTICS FOR UPDATED FOR NEW GENERATION

Husssain Babu[1], Mohammad Ali[2]

Faculty of Art and Architecture, Payame Noor University, Iran

MSc student of Geography & urban Planning, Payam Noor University, Iran

----------**********----------

ABSTRACT:

Robotics is the branch of technology that deals with the design, construction, operation and application of robots and computer systems for their control, sensory feedback, and information processing. These technologies deal with automated machines that can take the place of humans, in hazardous or manufacturing processes, or simply just resemble humans. Many of today's robots are inspired by nature contributing to the field of bio-inspired robotics

----------**********----------

Introduction:

Robotics is the most growing and enormous developing field which has changed our life style from normal one to completely machinery and artificially, and this enhance our life mostly as easily as comfortably…

Robotics

Robotics is the branch of technology that deals with the design, construction, operation and application of robots [1] and computer systems for their control, sensory feedback, and information processing. These technologies deal with automated machines that can take the place of humans, in hazardous or manufacturing processes, or simply just resemble humans. Many of today's robots are inspired by nature contributing to the field of bio-inspired robotics.

Etymology

The word *robotics* was derived from the word *robot*, which was introduced to the public by Czech writer Karel Čapek in his play *R.U.R. (Rossum's Universal Robots)*, which premiered in 1921.[3] The word *robot* comes from the Slavic word *robota*, which is used to refer forced labor.According to the *Oxford English Dictionary*, the word *robotics* was first used in print by Isaac Asimov, in his science fiction short story "Liar!", published in May 1941 in *Astounding Science Fiction*. Asimov was unaware that he was coining the term; since the science and technology of electrical devices is *electronics*, he assumed *robotics* already referred to the science and technology of robots. In some of Asimov's other works, he states that the first use of the word *robotics* was in his short story *Runaround* (Astounding Science Fiction, March 1942).[4][5] However, the original publication of "Liar!" predates that of

"Runaround" by five months, so the former is generally cited as the word's origin.

History :

A scene from Karel Čapek's 1920 play R.U.R., showing three robots

Stories of artificial helpers and companions and attempts to create them have a long history.

The word *robot* was introduced to the public by the Czech writer Karel Čapek in his play *R.U.R. (Rossum's Universal Robots)*, published in 1920.[3] The play begins in a factory that makes artificial people called *robots* creatures who can be mistaken for humans – though they are closer to the modern ideas of androids. Karel Čapek himself did not coin the word. He wrote a short letter in reference to an etymology in the *Oxford English Dictionary* in which he named his brother Josef Čapek as its actual originator.[3]

Actuation

A robotic leg powered by air muscles

Actuators are like the "muscles" of a robot, the parts which convert stored energy into movement. By far the most popular actuators are electric motors that spin a wheel or gear, and linear actuators that control industrial robots in factories. But there are some recent advances in alternative types of actuators, powered by electricity, chemicals, or compressed air.

Air muscles:

Pneumatic artificial muscles, also known as air muscles, are special tubes that contract (typically up to 40%) when air is forced inside them. They have been used for some robot applications.

Sensing:

Sensors allow robots to receive information about a certain measurement of the environment, or internal components. This is essential for robots to perform their tasks, and act upon any changes in the environment to calculate the appropriate response. They are used for various forms of measurements, to give the robots warnings about safety or malfunctions, and to provide real time information of the task it is performing.

Mechanical grippers

One of the most common effectors is the gripper. In its simplest manifestation it consists of just two fingers which can open and close to pick up and let go of a range of small objects. Fingers can for example be made of a chain with a metal wire run through it.[34] Hands that resemble and work more like a human hand include the Shadow Hand, the Robonaut hand,[35] ... Hands that are of a mid-level complexity include the Delft hand.[36][37] Mechanical grippers can come in various types, including friction and encompassing jaws. Friction jaws use all the force of the gripper to hold the object in place using friction. Encompassing jaws cradle the object in place, using less friction.

Vacuum grippers:

Vacuum grippers are very simple astrictive[38] devices, but can hold very large loads provided the prehension surface is smooth enough to ensure suction.

Pick and place robots for electronic components and for large objects like car windscreens, often use very simple vacuum grippers.

Snaking

Several snake robots have been successfully developed. Mimicking the way

real snakes move, these robots can navigate very confined spaces, meaning they may one day be used to search for people trapped in collapsed buildings.[71] The Japanese ACM-R5 snake robot[72] can even navigate both on land and in water.[73]

Environmental interaction and navigation:

RADAR, GPS, LIDAR, ... are all combined to provide proper navigation and obstacle avoidance (vehicle developed for 2007 DARPA Urban Challenge)

Though a significant percentage of robots in commission today are either human controlled, or operate in a static environment, there is an increasing interest in robots that can operate autonomously in a dynamic environment. These robots require some combination of navigation hardware and software in order to traverse their environment.

Human-robot interaction:

Kismet can produce a range of facial expressions.

If robots are to work effectively in homes and other non-industrial environments, the way they are instructed to perform their jobs, and especially how they will be told to stop will be of critical importance. The people who interact with them may have little or no training in robotics, and so any interface will need to be extremely intuitive. Science fiction authors also typically assume that robots will eventually be capable of communicating with humans through speech, gestures, and facial expressions, rather than a command-line interface. Although speech would be the most natural way for the human to communicate, it is unnatural for the robot. It will probably be a long time before robots interact as naturally as the fictional C-3PO.

Education and training:

The SCORBOT-ER 4u – educational robot.

Robotics engineers design robots, maintain them, develop new applications for them, and conduct research to expand the potential of robotics.[105] Robots have become a popular educational tool in some middle and high schools, as well as in numerous youth summer camps, raising interest in programming, artificial intelligence and robotics among students. First-year computer science courses at several universities now include programming of a robot in addition to traditional software engineering-based coursework.

Employment

A robot technician builds small all-terrain robots. (Courtesy: MobileRobots Inc)

Robotics is an essential component in many modern manufacturing environments. As factories increase their use of robots, the number of robotics–related jobs grow and have been observed to be steadily rising.[107]

ANDROID:

An **android** is a robot[1] or synthetic organism[2][3][4] designed to look and act like a human, especially one with a body having a flesh-like resemblance.[2] Although "android" is used almost universally to refer to both sexes, and those of no particular sex, "android" technically refers to the male form, while "gynoid" is the feminine form. Until recently, androids have largely remained within the domain of science fiction, frequently seen in film and television. However, advancements in robotic technology have allowed the design of functional and realistic humanoid robots.

Japan:

DER 01, a Japanese actroid

The Intelligent Robotics Lab, directed by Hiroshi Ishiguro at Osaka University, and Kokoro Co., Ltd. have demonstrated the Actroid at Expo 2005 in Aichi Prefecture, Japan. In 2006, Kokoro Co. developed a new *DER 2* android. The height of the human body part of DER2 is 165 cm. There are 47 mobile points. DER2 can not only change its expression but also move its hands and feet and twist its body. The "air servosystem" which Kokoro Co. developed originally is used for the actuator. As a result of having an actuator controlled precisely with air pressure via a servosystem, the movement is very fluid and there is very little noise. DER2 realized a slimmer body than that of the former version by using a smaller cylinder. Outwardly DER2 has a more beautiful proportion. Compared to the previous model, DER2 has thinner arms and a wider repertoire of expressions. Once programmed, it is able to choreograph its motions and gestures with its voice.

The Intelligent Mechatronics Lab, directed by Hiroshi Kobayashi at the Tokyo University of Science, has developed an android head called *Saya*, which was exhibited at Robodex 2002 in Yokohama, Japan. There are several other initiatives around the world involving humanoid research and development at this time, which will hopefully introduce a broader spectrum of realized technology in the near future. Now Saya is *working* at the Science University of Tokyo as a guide.

Korea:

EveR-2, the first android that has the ability to sing..

KITECH researched and developed EveR-1, an android interpersonal communications model capable of emulating human emotional expression via facial "musculature" and capable of rudimentary conversation, having a vocabulary of around 400 words. She is 160 cm tall and weighs 50 kg, matching the average figure of a Korean women in her twenties. EveR-1's name derives from the Biblical Eve, plus the letter *r* for *robot*. EveR-1's advanced computing processing power enables speech recognition and vocal synthesis, at the same time processing lip synchronization and visual recognition by 90-degree micro-CCD cameras with face recognition technology. An independent microchip inside her artificial brain handles gesture expression, body coordination, and emotion expression. Her whole body is made of highly advanced synthetic jelly silicon and with 60 artificial joints in her face, neck, and lower body; she is able to demonstrate realistic facial expressions and sing while simultaneously dancing.

Reference:

1. Hassan, Qusay (2011). "Demystifying Cloud Computing". *The Journal of Defense Software Engineering* (CrossTalk) **2011** (Jan/Feb): 16–21. Retrieved11 December 2014.
2. "The NIST Definition of Cloud Computing". National Institute of Standards and Technology. Retrieved 24 July 2011.
3. "What is Cloud Computing?". *Amazon Web Services*. 2013-03-19. Retrieved 2013-03-20.
4. "Baburajan, Rajani, "The Rising Cloud Storage Market Opportunity Strengthens Vendors," infoTECH, August 24, 2011". It.tmcnet.com. 2011-08-24. Retrieved2011-12-02.
5. Oestreich, Ken, (2010-11-15). "Converged Infrastructure". *CTO*

Forum. Thectoforum.com. Retrieved 2011-12-02.

6. "Where's The Rub: Cloud Computing's Hidden Costs". 2014-02-27. Retrieved2014-07-14.
7. "Cloud Computing: Clash of the clouds". *The Economist*. 2009-10-15. Retrieved 2009-11-03.
8. "Gartner Says Cloud Computing Will Be As Influential As E-business". Gartner. Retrieved 2010-08-22.
9. Gruman, Galen (2008-04-07). "What cloud computing really means". InfoWorld. Retrieved 2009-06-02.
10. "The economy is flat so why are financials Cloud vendors growing at more than 90 percent per annum?". FSN. March 5, 2013.
11. Liu, [edited by] Hongji Yang, Xiaodong (2012). "9". *Software reuse in the emerging cloud computing era*. Hershey, PA: Information Science
12. zzure 8, "A network 70 is shown schematically as a cloud", US Patent 5,485,455, column 17, line 22, filed Jan 28, 1994
13. Figure 1, "the cloud indicated at 49 in Fig. 1.", US Patent 5,790,548, column 5 line 56–57, filed April 18, 1996
14. Antonio Regalado (31 October 2011). "Who Coined 'Cloud Computing'?". *Technology Review* (MIT). Retrieved 31 July 2013.
15. Announcing Amazon Elastic Compute Cloud (Amazon EC2)