

General Introduction of Automation Robotics

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Description

Mankind has always strived to give life-like qualities to its artifacts in an attempt to find substitutes for himself to carry out his orders and also to work in a hostile environment. The popular concept of a robot is of a machine that looks and works like a human being. This humanoid concept has been inspired by science fiction stories and films in the twentieth century. The industrial robots of today may not look the least bit like a human being although all the research is directed to provide more and more anthropomorphic and human-like features and super-human capabilities in these. To sum up machines that can replace human beings as regards to physical work and decision making are categorized as robot and their study as robotics. The robot technology is advancing rapidly, The industry is moving from the current state of automation to increase productivity and to deliver uniform quality. Robots and robot-like manipulators are now commonly employed in hostile environment, such as at various places in an atomic plant for handling radioactive materials. Robots are being employed to construct and repair space stations and satellites. There are now increasing number of applications of robots such as in nursing and aiding a patient being designed to do damage control inside human veins. Robot like systems is now employed in heavy earth-moving equipment. It is not possible to put up an exhaustive list of robot applications. One type of robot commonly used in the industry is a robotic manipulator or simply a manipulator or a robotic arm. It is an open or closed kinematic chain of rigid links interconnected joints. In some configurations links can be considered

to correspond to human anatomy as waist upper arm, and forearm with joints at shoulder and elbow. At the end of the arm a wrist joint connects an end effector to the forearm. The end-effector may be a tool and its fixture or a gripper or any other device to do the work. The end-effector is similar to the human hand with or without fingers. A robotic arm, Karel Capek, in his drama, introduced the word robot to the world in 1921. Perhaps the best record is of Joseph Jacquard's use of punched cards in mechanical looms, which laid the foundations for NC works on control actions based on stored information that may include start and stop operations. Coordinate points actions logic for branching and control sequences. A manufacturing system producing a variety of products in small batches without requiring major hardware changes with frequent changes in product models and production schedules. Machine to another till it is converted to the final product. Such a transfer line approach, producing a large quantity of the same product for an extended period of time may become useless when a major product change is required. It often ends up in abandoning the large capital investment. Contemporary industrial robots are reprogrammable machines that can perform different operations by simply modifying stored data feature that evolved from numerical control and is a solution for both of the above situations.

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