

December 2021

NEWS LETTER

DEPARTMENT OF ELECTRONIC ENGINEERING

WEBINAR ON ROBOTICS

Robotics is a branch of engineering that involves the conception, design, manufacture and operation of robots. The objective of the robotics field is to create intelligent machines that can assist humans in a variety of ways. Robotics can take on a number of forms. A robot may resemble a human, or it may be in the form of a robotic application, such as robotic process automation (RPA), which simulates how humans engage with software to perform repetitive, rules-based tasks. While the field of robotics and exploration of the potential uses and functionality of robots have grown substantially in the 20th century, the idea is certainly not a new one. The early history of robotics The term robotics is an extension of the word robot. One of its first uses came from Czech writer Karel Čapek, who used the word in his play, Rossum's Universal Robots, in 1920.

However, it is science fiction author Isaac Asimov who has been given credit for being the first person to use the term in the 1940s by Oxford English Dictionary. In Asimov's story, he suggested three principles to guide the behavior of autonomous robots and smart machines. Asimov's Three Laws of Robotics have survived to the present:

Robots must never harm human beings.

Robots must follow instructions from humans without violating rule 1.

Robots must protect themselves without violating the other rules.

However, it wasn't until a couple of decades later in 1961 -- based on designs from the '50s -- that the first programmable robot, Unimate, was created to move scalding metal pieces from a die-cast machine.

Robotics applications

Today, industrial robots, as well as many other types of robots, are used to perform repetitive tasks. They may take the form of a robotic arm, robotic exoskeleton or traditional humanoid robots. Industrial robots and robot arms are used by manufacturers and warehouses, such as those owned by Amazon, Devol, Best Buy and more.

To function, a combination of computer programming and algorithms, a remotely controlled manipulator, actuators, control systems -- action, processing and perception -- real-time sensors and an element of automation helps to inform what a robot or robotic system does.

Some additional applications for robotics are the following:

home electronics -- see Honda's ASIMO

computer science/computer programming

artificial intelligence

data science

law enforcement/military

Event Outcome

Role of robotics system in the
Automation and
process control
in industry

Machine learning in robotics

Machine learning and robotics intersect in a field known as robot learning. Robot learning is the study of techniques that enable a robot to acquire new knowledge or skills through machine learning algorithms.

Some applications that have been explored by robot learning include grasping objects, object categorization and even linguistic interaction with a human peer. Learning can happen through self-exploration or via guidance from a human operator.

To learn, intelligent robots must accumulate facts through human input or sensors. Then, the robot's processing unit will compare the newly acquired data to previously stored information and predict the best course of action based on the data it has acquired.

However, it's important to understand that a robot can only solve problems that it is built to solve. It does not have general analytical abilities.



Chief Guest/Resource Persons

Er. Amandeep singh bhandari

Ast. Prof UCOE punjai university

patiala

WBINAR ON "USE OF IOT IN CORE INDUSTRIES"

Industrial IoT (IIoT) brings machines, cloud computing, analytics, and people together to improve the performance and productivity of industrial processes. With IIoT, industrial companies can digitize processes, transform business models, and improve performance and productivity, while decreasing waste. These asset intensive companies operating in a range of industries such as manufacturing, energy, agriculture, transportation and utilities, are working on IoT projects that connect billions of devices and deliver value across a variety of use cases including predictive quality and maintenance analytics, asset condition monitoring, and process optimization.

A typical industrial facility has thousands of sensors generating data. With IIoT, manufacturers, for example, can combine machine data from a single line, factory, or a network of sites, such as manufacturing plants, assembly facilities, and refineries, to proactively improve performance by identifying potential bottlenecks, failures, gaps in production processes, and quality issues before they happen. Combining data from a network of sites can also result in a more efficient control of material flow, early detection and identification and elimination of production or supply bottlenecks, and the optimized operation of machinery and equipment in all facilities.

Industrial IoT is defined as a network of devices, machinery and sensors connected to each other and to the Internet, with the purpose of collecting data and analyze it to apply this information in continuous process improvement. There are many Industrial IOT applications out there, and they have driven an increasing number of companies to engage in this new paradigm to improve their productivity and optimize their expenses and profits.

This is a market that is constantly expanding – one that major players have already adopted. Even though studies show different figures when it comes to accurate predictions of the market value of IIoT in the upcoming years, the most important reports agree that investment will increase threefold at the very least.

o have access to this competitive advantage, one would be wise to know the main IIoT applications and how to implement the system.



EVENT OUTCOME

Role of IOT based system in the process industries



The main Industrial IOT applications

Studies published by Deloitte show the importance given by the business world to generating IoT environments: in its 'Industry 4.0' report, 94% of the survey participants stated that digital transformation is an essential strategic objective for the organization.

While this is a global trend, in the case of the industrial sector, businesses need to be aware of the usefulness of Industrial IOT applications to generate processes that remain relevant in the upcoming years.

An event poster for "IOT BASED INSTRUMENTS". The poster has a purple and blue gradient background. At the top left, there is a logo for "Bhai Gurdas Institute of Engineering & Technology, Sangrur". Below it is a logo for "SEE" (Society of Electrical Engineers, Bichet). At the bottom left is a logo for "INTERNET OF THINGS". In the center, there is a photo of Dr. Munish Kumar, an Assistant Professor at Central University, Haryana. The text on the poster includes "IOT BASED INSTRUMENTS", "23rd February 2021", and "Department of Electrical Engineering, BHAI GURDAS INSTITUTE OF ENGINEERING & TECHNOLOGY, SANGRUR".

Chief Guest/ Resoure Persons

Dr. Ashish sharma,
Department of EE chandigarh
University, Gharuan

WEBINAR ON "EMBEDDED SYSTEM AND CONTROL"

An Embedded System is defined as the system that is placed in another system. It is defined as a group of a system that is used to design some particular task. In the embedded system the software system is placed in a hardware system for some particular task. The embedded system can be categorized as a microcontroller-based system that can be used to serve any particular type of operation. The embedded system can be independent or can reside in another large system.

What is Embedded Control Systems?

The embedded system is a type of system that is very powerful, fast, and small size in nature so that it can easily fit in other systems and perform their task. The embedded system can be categorized as a computer system but they do not perform the operations performed by computer systems. The embedded systems can be used in mobile phones, medical devices, or any other manufacturing equipment. Various types of operations and functions can perform by embedded systems and used to control smaller parts of a larger system. The embedded system is generally a combination of software and hardware system and other components parts so that a particular operation can be executed.

For example, in-car the brake system can act as an embedded system. But when the embedded system is designed the functions cannot be changed once it is designed on another hand in a computer system this functionality of replacing components and software is possible. From the embedded system one single function or multiple functions can be performed but once it is designing the functionality cannot be changed for the embedded systems. The microprocessor is the key component of an embedded system.

Embedded Control Systems



When you choose embedded controls, it is always necessary to consider the application with which they will be used. Controls applications embedded systems are a combination of hardware and software that handle specific tasks not performed by the CPU. Choosing an embedded system for controls applications should be based on the specific needs of the application and how the host device will be used.

When should you use an embedded system?

As with any kind of component decision, the choice to use an embedded controller over traditional PAC or PLC systems comes down to the design of the device. Embedded controllers are a clear choice for applications that demand high-speed control, custom-made algorithms, and high-level signal processing. The reason for this is that embedded controls systems can perform these tasks for the application in efficient and innovative ways.

Another clear reason for using an embedded system is the flexibility it provides. Embedded controls systems can be used for a range of different kinds of applications. This is beneficial because it cuts down on the time and cost of redesigning systems repeatedly or having to rely on custom designs.

EVENT OUTCOME

Understanding of essential concepts of embedded system designing

Chief Guest/ Resoure Persons

Er. Gurmeet shrma,
Eureka Electrosoft Sol. Pvt. Ltd

Independence day celebration

Independence Day is a day when people in India pay homage to their leaders and those who fought for India's freedom in the past. The period leading up to Independence Day is a time when major government buildings are illuminated with strings of lights and the tricolor flutters from homes and other buildings. Broadcast, print and online media may have special contests, programs, and articles to promote the day. Movies about India's freedom fighters are also shown on television.

The president delivers the "Address to the Nation" on the eve of Independence Day. India's prime minister unfurls India's flag and holds a speech at the Red Fort in Old Dehli. Flag hoisting ceremonies and cultural programs are held in the state capitals and often involve many schools and organizations.



Guruparab Celebration

Guru Nanak Jayanti

Guru Nanak Jayanti, also known as Gurpurab, is the most important festival for the followers of the religion of Sikhism. It is celebrated to commemorate the birth anniversary of the first Sikh Guru, Guru Nanak Dev. The festival is celebrated on the day of Kartik Poornima, which is the fifteenth lunar day in the month of Kartik according to the Hindu calendar, and usually falls in the month of November by the Gregorian calendar.

Guru Nanak Jayanti 2020: This year will mark the 551st birth anniversary of Guru Nanak and will be observed on Monday, November 30.



Christmas Celebration

Christmas is celebrated every year on December 25. The festival marks the celebration of the birth anniversary of Jesus Christ. Jesus Christ is worshipped as the Messiah of God in Christian Mythology. Hence, his birthday is one of the most joyous ceremonies amongst Christians. Although the festival is mainly celebrated by the followers of Christianity, it is one of the most enjoyed festivals all over the globe.

