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Designed by:- MCA Deptt.

Alumni Section

EMERGING TREND IN CLOUD COMPUTING

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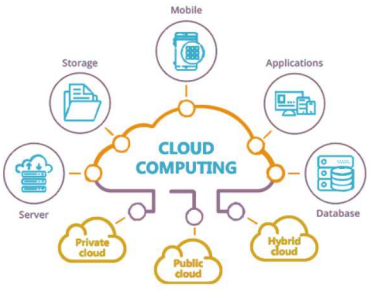
Cloud computing is on demand delivery of IT resources via the internet. Instead of buying, owing and maintaining physical data centers and servers, you can access technical services such as computing power, storage and database on as need basis from cloud providers. Cloud computing gives you instant access to broad range of technology, so you can innovate faster and build nearly anything you imagine from infrastructure resources such as compute, storage and database to IoT, machine learning, data analysis and much more. Now a days, industries are using cloud for a wide variety of use cases such as data backup, disaster recovery, email, virtual desktops, software development & testing, big data analytics and web apps.



With cloud computing, business will become more agile, reduce costs, instantly scalable & deploy globally in minutes as you don't need to make large, upfront investments in hardware and overpay the capacity you don't use. You can access resources from cloud in real time as they are needed and scale up these resources to grow and shrink capacity instantly as your business needs change. It also makes it easy to deploy globally in minutes.

CLOUD COMPUTING MARKET

As per the research done by PRNewswire (New York, 2019), "The global cloud computing market size is expected to grow from USD 272.0 billion in 2018 to USD 623.3 billion by 2023, at a Compound Annual Growth Rate (CAGR) of 18.0% during the forecast period". Increased automation and agility need for delivering enhanced customer experience, and increased cost savings and return on investment are the major growth factors for the cloud computing market. Market area available for cloud computing are: Government, Private organizations, Academics and education, Banking, financial services and insurance, health care, supply chain management.In all these sectors, for all type and size of organizations, using cloud services would be an efficient, faster, economically feasible way to grow and manage their business. Cost of preparing, maintaining own IT infrastructure, rescaling, looking for security checks is tedious task.

Top 7 most common uses of cloud computing

Cloud computing has been credited with increasing competitiveness through cost reduction, greater flexibility, elasticity and optimal resource utilization. Here are a few situations where cloud computing is used to enhance the ability to achieve business goals.

Chatbots: The expanded computing power and capacity of the cloud enables us to store information about user preferences. This can be used to provide customized solutions, messages and products based on the behaviour and preferences of users. **Siri, Alexa and Google Assistant** – all are cloud-based natural-language intelligent bots.

to be continued.....

Alumni Section

Communication: Most of the messaging and calling apps like Skype and WhatsApp are also based on cloud infrastructure. All your messages and information are stored on the service provider's hardware rather than on your personal device.

Test and development: Probably the best scenario for the use of a cloud is a test and development environment. This entails securing a budget, setting up your environment through physical assets, significant manpower and time. Then comes the installation and configuration of your platform. All this can often extend the time it takes for a project to be completed and stretch your milestones. With cloud computing, there are now readily available environments tailored for your needs at your fingertips. This often combines, but is not limited to, automated provisioning of physical and virtualized resources.

Productivity: Office tools like Microsoft Office 365 and Google Docs use cloud computing, allowing you to use your most-productive tools over the internet. You can work on your documents, presentations and spreadsheets - from anywhere, at any time.

Backup And Recovery: Dropbox, Google Drive and Amazon S3 are popular examples of cloud backup solutions. Your cloud service provider is responsible for securing data and meeting legal and compliance requirements.

Big Data Analytics: There are many open source big data tools that are based on the cloud for instance Hadoop, Cassandra, HPCC etc. Without the cloud, it would be very difficult to collect and analyse data in real time, especially for small companies.

Business Process: Many business management applications like customer relationship management (CRM) and enterprise resource planning (ERP) are also based on a cloud service provider. Software as a Service (SAAS) has become a popular method for deploying enterprise level software. Salesforce, Hubspot, Marketo etc. are popular examples of this model.

Indians Among the Most Affected by macOS Malware Shlayer: Kaspersky

People from India are among those most affected by Shlayer, the most widespread macOS threat in 2019, after those in the US, says a new report from cybersecurity firm Kaspersky. A smart malware distribution system, Shlayer spreads via a partner network, entertainment websites and even Wikipedia, demonstrating that even users that only visit legal sites still need additional protection online.

Top countries where users have been affected by the threat include the US (31 percent), India (18.9 percent), Germany (14 percent), France (10 percent) and the UK (10 percent), according to the report.
"The macOS platform is a good source of revenue for cybercriminals, who are constantly looking for new ways to deceive users, and actively use social engineering techniques to spread their malware.

Shlayer's share among all attacks on macOS devices registered by Kaspersky products in January - November 2019 amounted to almost a third, with nearly all other top 10 macOS threats being the adware that Shlayer installs: AdWare.OSX.Bnodlero, Ad Ware. OSX.Geonei, AdWare.OSX.Pirrit and AdWare.OSX.Cimpli.

The infection process often consists of two phases - first the user installs Shlayer, then the malware installs a selected type of adware. Device infection, however, starts with an unwitting user downloading the malicious programme.

In order to achieve installations, the threat actor behind Shlayer sets up a malware distribution system with a number of channels leading users to download the malware.

Apple Imagines an iMac Built Using Single Piece of Glass: Patent Application

A new patent filed by Apple has been spotted online, offering a glimpse at what might turn out to be a future iMac model. The iMac is an all-in-one desktop that features an attractive, slim design.

The company could be working on a new computer made out of a single sheet of glass. The patent, first spotted by Apple Insider, published by the US Patent and Trademark Office is for a device called "Electronic Device with Glass Housing Member".

From the various images and the description contained within the application, Apple seems to be working on a device with a single, curved sheet of glass with a large flat area at the bottom for input devices such as a keyboard or a trackpad. The glass display would be supported by a rear wedge section that would fit inside a hole at the bottom, helping the main display stay upright. The wedge could house other critical components and power bricks.

The concept could also involve docking a MacBook laptop, using the space at the bottom for an input device. It could allow users to simply place their MacBook laptops and use its keyboard while it syncs with the main desktop machine.

Gaganyaan Mission Will Prove to Be Milestone for New India

Prime Minister Narendra Modi said that the Gaganyaan mission will be a historic achievement in the field of science and technology for India in the 21st century and a milestone for New India.

The Prime Minister further said **four pilots of the Indian Air Force have been shortlisted for the mission and they will be going to Russia for training for the mission.**

"Four candidates have been chosen for the mission as astronauts, all four are pilots of the Indian Air Force. These talented youth are symbols of India's skills, talent, ability, courage and dreams. They will soon be going to Russia for training in the next few days," said by prime minister.

"I am confident this will be another golden chapter of friendship and cooperation between India and Russia. They will be trained for over a year. After that, the responsibility of carrying the hopes and aspirations of the nation and soaring into space will rest on the shoulders of one of them. On the auspicious occasion of Republic Day, I congratulate these four youngsters and the Indian and Russian scientists and engineers associated with this mission," he said.

The Narendra Modi government has sanctioned Rs. 10,000 crores for the Gaganyaan project. The launch will coincide with the 75th year of India's independence in 2022.

Scientists Recreate Voice of a 3,000-Year-Old Egyptian Mummy

Nesyamun was an ancient Egyptian priest who sang chants as part of his ritual duties at the temple of Karnak in Thebes during the reign of Pharaoh Ramses XI. Now, 3,000 years after his death, scientists have recreated the sound of his voice, with the help of a 3D-printed vocal tract. The mummy of Nesyamun, which can be found in the Leeds City Museum in England, was first unwrapped in 1824. Subsequent studies determined he had died in his mid-50s with no damage to the bones around his neck. Nesyamun's coffin inscriptions showed his dying wish was to be able to speak after his death, making him an ideal subject for this study, which was published Thursday(23rd Jan 2020) in the journal Scientific Reports. According to the study, the exact dimensions of an individual's vocal tract produce a sound unique to them. Nesyamun's voice could be synthesized using non-destructive CT scans, 3D printing and an electronic larynx.

An accurate replica can only be created if the soft tissues are well preserved, which scientists found was the case here. However, only a single vowel sound could be created through this technique — not running speech. In 2016, the mummy was taken to the Leeds General Infirmary to undergo a CT scan. Researchers were able to gather the necessary measurements to reproduce the vocal tract, which runs from the larynx (also known as the voice box) to the lips.

Researchers were then able to create a 3D-printed airway and connect it to an artificial larynx to reproduce a single sound, reminiscent of the “ah” and “eh” vowel sounds heard in the English words “bed” and bad.” Future research may lead to the recreation of a string of words and possibly full sentences. “It has been such an interesting project that has opened a novel window onto the past and we're very excited to be able to share the sound with people for the first time in 3,000 years,” Professor David Howard, who co-authored the study, said in a statement.

The findings represent the first time the technique for reproducing vocal tracts have been successfully used on a dead person. While the sound produced is not the mummy actually speaking, the researchers say is the same sound his voice would have made. For now, the sound will likely be added to the mummy's exhibit at the Leeds City Museum, where it has attracted visitors for nearly 200 years. “Ultimately, this innovative interdisciplinary collaboration has given us the unique opportunity to hear the sound of someone long dead by virtue of their soft tissue preservation combined with new developments in technology,” said co-author Professor Joann Fletcher.“While this has wide implications for both healthcare and museum display, its relevance conforms exactly to the ancient Egyptians' fundamental belief that 'to speak the name of the dead is to make them live again.'”

VYOMMITRA, ISRO's First Humanoid for Gaganyaan Mission

Hello everyone. I am Vyommitra. The prototype of the half humanoid being made for the first unmanned Gaganyaan mission. I can monitor few module parameters, alert you, and perform life support operations".

Vyommitra, the Indian Space Research Organisation's (ISRO) half humanoid will go as a trial to space before Gaganyaan mission takes off with astronauts in 2022.

ISRO's half humanoid Vyom Mitra will be placed in the first unmanned mission under 'Gaganyaan' and will simulate most of the human body functions. Speaking to a news agency, Sam Dayal, ISRO scientist said, "Legs are not there. It will try to simulate a human and report back to us. We are doing this as an experiment."

Vyommitra introduced herself as a prototype of the half humanoid being made for the first unmanned Gaganyaan mission to the visitors here at an event.

The role of Vyommitra has been described as monitoring of crew parameters, perform Environmental Control and Life Support System (ECLSS) functions, and mimic all crew activity like switch operations on a panel, etc. It shall be the companion for the astronaut, recognize his face and respond to various queries.

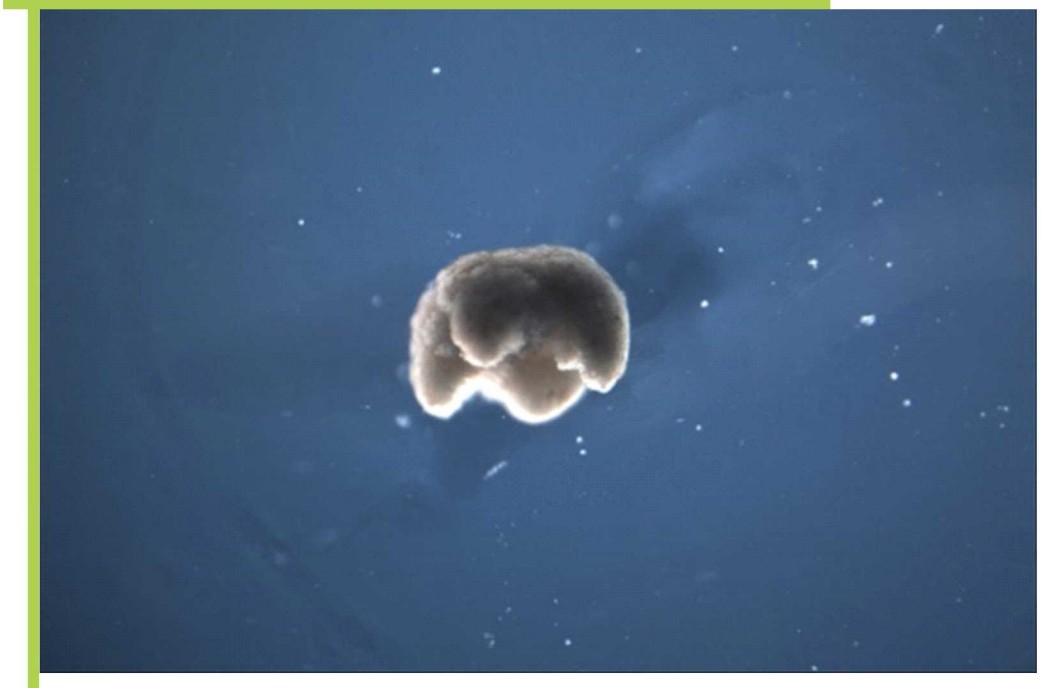
“To carry out these functions like Facial Recognition, etc., Artificial Intelligence (AI) tools shall be used inside the humanoid. It shall be also trained to operate critical machines in the crew module, initially expected to do alone during the only humanoid flights and, later, as an associate of crew member within the spacecraft cabin. Various sensors and instrumentation inside the humanoid records the parameters like heat, noise, gravitational de-acceleration etc. during the space flight, so that scientist makes changes to make the space flight more suitable and safer for humans.

World's First 'Living Robots' Created by Scientists, Using Stem Cells

A group of scientists have succeeded in using living cells from frog embryos into other new life-forms, which they are referring to as a 'living, programmable organisms'. The newly constructed self-healing creature are called '**xenobots**' and can approach towards targets. They may also help in carrying medicine inside a patient's body or conduct similar work.

These are novel living machines," says Joshua Bongard, a computer scientist and robotics expert at the University of Vermont who co-led the new research, also adding "They're neither a traditional robot nor a known species of animal. It's a new class of artefact: a living, programmable organism."

These creatures were designed on a supercomputer and then assembled and tested by biologists at Tufts University, who harvested stem cells from the embryos of African frogs, the species Xenopus laevis (hence the name, xenobots).



Hydrogel Enables Ingestible Medical Devices That Can Be Broken Down With Light

New light-sensitive material could eliminate some of the endoscopic procedures needed to remove gastrointestinal devices. A variety of medical devices can be inserted into the gastrointestinal tract to treat, diagnose, or monitor GI disorders. Many of these have to be removed by endoscopic surgery once their job is done. However, MIT engineers have now come up with a way to trigger such devices to break down inside the body when they are exposed to light from an ingestible LED. The new approach is based on a light-sensitive hydrogel that the researchers designed. Incorporating this material into medical devices could avoid many endoscopic procedures and would give doctors a faster and easier way to remove devices when they are no longer needed or are not functioning properly, the researchers say.

"We are developing a set of systems that can reside in the gastrointestinal tract, and as part of that, we're looking to develop different ways in which we can trigger the disassembly of devices in the GI tract without the requirement for a major procedure," says Giovanni Traverso, an assistant professor of mechanical engineering, a gastroenterologist at Brigham and Women's Hospital, and the senior author of the study. An ingestible LED like this could be swallowed to expose light-sensitive medical devices to light, helping them to break down in the body. In a study in pigs, the researchers showed that devices made with this light-sensitive hydrogel can be triggered to break down after being exposed to blue or ultraviolet light from a small LED.

Ritu Raman, a postdoc at MIT's Koch Institute for Integrative Cancer Research, is the lead author of the paper, which appears today in *Science Advances*. Other authors of the paper are former technical associates Tiffany Hua, Jianlin Zhou, Tina Esfandiary, and Vance Soares; technical associates Declan Gwynne, Joy Collins, and SiddarthaTamang; graduate student Simo Pajovic; Division of Comparative Medicine veterinarian Alison Hayward; and David H. Koch Institute Professor Robert Langer. **Controlled breakdown** Over the past several years, Traverso and Langer have developed many ingestible devices designed to remain in the GI tract for extended periods of time. They have also worked on a variety of strategies to control the breakdown of such devices, including methods based on changes in pH or temperature, or exposure to certain chemicals. "Given our interests in developing systems that can reside for prolonged periods in the gastrointestinal tract, we continue to investigate a range of approaches to facilitate the removal of these systems in the setting of adverse reaction or when they are no longer needed," Traverso says. "We're really looking at different triggers and how they perform, and whether we can apply them to different settings."

In this study, the researchers explored a light-based trigger, which they believed could offer some advantages over their earlier approaches. One potential advantage is that light can act at a distance and doesn't need to come into direct contact with the material being broken down. Also, light normally does not penetrate the GI tract, so there is no chance of accidental triggering. To create the new material, Raman designed a light-sensitive hydrogel based on a material developed in the lab of Kristi Anseth, a former Langer lab postdoc who is now a professor of chemical and biological engineering at the University of Colorado at Boulder. This polymer gel includes a chemical bond that is broken when exposed to a wavelength of light between 405 and 365 nanometers (blue to ultraviolet). Raman decided that instead of making a material composed exclusively of that light-sensitive polymer, she would use it to link together stronger components such as polyacrylamide. This makes the overall material more durable but still allows it to break apart or weaken when exposed to the right wavelength of light. She also constructed the material as a "double network," in which one polymer network surrounds another.

How artificial intelligence provided early warnings of the Wuhan virus

During the kind of virus outbreak that China and other nations are now contending with, time is of the essence. The earlier the warning, the better the chance to contain the contagion.

One problem, though, is that governments are sometimes reticent to share information. Such was the case in 2002 and 2003, when Chinese authorities were accused of covering up the SARS epidemic that eventually claimed over 740 lives around the world.

With the current outbreak, involving a coronavirus that originated in Wuhan and has so far taken over 40 lives, the Chinese government is being more transparent, as Germany's health minister noted to Bloomberg yesterday on the sidelines of the World Economic Forum in Davos.

But even if Beijing had been less forthcoming, the world now has better information tools at its disposal than it did 17 years ago. One is provided by Bluedot, a Toronto startup whose AI-driven health monitoring platform analyzes billions of data points. Launched in 2014, the venture alerted its clients to the outbreak on Dec. 31, well ahead of notifications from the World Health Organization and US Centers for Disease Control and Prevention.

The company says it "uses big data analytics to track and anticipate the spread of the world's most dangerous infectious diseases." Last August it announced an investment round that brought its total funding to about $10 million.

Bluedot uses natural-language processing and machine-learning techniques to sift through global news reports, airline data, and reports of animal disease outbreaks, as described by Wired. Epidemiologists look over the automated results, and if everything checks out, the company sends alerts to its clients in the public and private sectors.

BlueDot tries to track and move information faster than the disease can travel. It correctly predicted where outside mainland China the Wuhan virus would land—Bangkok, Seoul, Taipei, Tokyo—after its initial appearance.

Company founder Kamran Khan told the Canadian Press, "On one hand, the world is rapidly changing, where diseases are emerging and spreading faster. On the other hand, we happen to have growing access to data we can use…to generate insights and spread them faster than the diseases spread themselves."

Unveiling new fully integrated proximity sensors for industrial applications

The Optoelectronics Group of Vishay Inter technology, Inc. (NYSE: VSH) introduced two new fully integrated proximity sensors designed to increase efficiency and performance in consumer and industrial applications. Featuring an IR emitter and a vertical cavity surface-emitting laser (VCSEL), respectively, the Vishay Semiconductors VCNL36821S and VCNL36826S each combine a photodiode, signal processing IC, and 12-bit ADC in a compact 2.55 mm by 2.05 mm by 1.0 mm surface-mount package.

Compared to previous-generation devices, the proximity sensors released offer smaller packages at a lower cost, making them ideal for space-constrained battery-powered applications, such as detecting if users are wearing or not wearing ear pods or virtual reality / augmented reality (VR / AR) headsets. With ranges to 300 mm, they also provide collision detection in toys and consumer and industrial robots. The VCNL36821S and VCNL36826S feature low power consumption down to 6 µA to increase efficiency in these applications.

The devices support the I^2C bus communication interface for easy access to the proximity signal, while their programmable interrupt function allows designers to specify high and low thresholds to reduce the continuous communication with the microcontroller. The proximity sensors use intelligent cancellation to eliminate cross-talk, while a smart persistence scheme ensures accurate sensing and faster response time. The IRED and VCSEL wavelengths peak at 940 nm and have no visible "red-tail." The VCNL36821S and VCNL36826S offer excellent temperature compensation from -40 °C to +85 °C, and a Moisture Sensitivity Level (MSL) of 3 — in accordance with J-STD-020 — for a floor life of 168 hours. The sensors are RoHS-compliant, halogen-free, and Vishay Green.

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