

DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY



# SPARK

MAGAZINE  
2022

*Life of Science & Technology*

## About MITS



**Madanapalle Institute of Technology & Science is established in 1998 in the picturesque and pleasant environs of Madanapalle and is ideally located on a sprawling 26.17 acre campus on Madanapalle - Anantapur Highway (NH-205) near Angallu, about 10km away from Madanapalle.**

**MIT\$ , originated under the auspices of Ratakonda Ranga Reddy Educational Academy under the proactive leadership of Late Sri. N. Krishna Kumar M.S. (U.S.A), the then President and Dr. N. Vijaya Bhaskar Choudary, Ph.D., Secretary & Correspondent of the Academy.**

**MIT\$ is governed by a progressive management that never rests on laurels and has been striving conscientiously to develop it as one of the best centers of Academic Excellence in India. The Institution's profile is firmly based on strategies and action plans that match changing demands of the nation and the students fraternity. MIT\$ enjoys constant support and patronage of NRI's with distinguished academic traditions and vast experience in Engineering & Technology.**

### **Institute Vision**

**To become a globally recognized research and academic institution and thereby contribute to technological and socio-economic development of the nation.**

### **Institute Mission**

**To foster a culture of excellence in research, innovation, entrepreneurship, rational thinking, and civility by providing necessary resources for generation, dissemination and utilization of knowledge and in the process create an ambience for practice-based learning to the youth for success in their careers.**



## About us



**The Department of Computer Science & Technology (CST) was established in the year 2018 and plays a vital role in producing value-based professionals to cater to the ever-challenging needs of technical excellence in the emerging areas of CST. The department offers one UG program with an intake of 60 students and the intake was enhanced to 180 seats in the year 2019. Department has adequate infrastructural facilities required for imparting high-quality education and the department is fully structured to meet the contemporary needs of the industry. Imparting high quality education is supported by well qualified and experienced faculty members with rich academic and industry exposure, who have pursued Masters/Ph.D degree from prestigious institutions like NITs, IITs, and Central Universities within India and abroad. Seminars, Workshops, and Technical Symposia are conducted in the department to keep faculty and students updated with latest developments in various technologies.**

### Department Vision

**To bring forth globally competent engineers with societal consciousness, who thrive in academics and research in Computer Science and Technology.**

### Department Mission

**M1: To deliver technical education of the highest quality by improving the curriculum and using effective pedagogical techniques by qualified faculty.**

**M2: To foster interaction between Industry and academia, to improve students' abilities in research, innovation, and entrepreneurship.**

**M3: To prepare the students to become professionally competent and intellectually adept by imparting required Skills to mitigate the societal problems.**

## **Program Outcomes (POs)**

**PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.**

**PO2: Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences**

**PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.**

**PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.**

**PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.**

**PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice.**

**PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.**

**PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.**

**PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.**

**PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.**

**PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.**

**PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.**

## **Program Educational Objectives (PEOs)**

**PEO1: Graduates will have successful career by contributing for innovation of new technologies and systems in the key domains of Computer Science & Technology.**

**PEO2: Graduates will be able to perform technical/ administrative roles in information technology industry / R&D sectors and pursue higher education in reputed institutions.**

**PEO3: Graduates will be ethically and socially responsible towards the societal development and opting a career as an entrepreneur with moral values in various domains of Computer Science & Technology.**

# Correspondent Message



WARM GREETINGS!!

**I** am delighted to share that the Department of Computer Science & Technology (CST) is coming up with the Annually Technical Magazine, SPARK, to showcase important Departmental events, achievements, activities, research and patent publications, Industrial/academical Interactions, Workshops, etc. of the CST department. Artistic sketches, Articles, Creative Corner and Poetry by the CST family have been included to highlight the diverse talent present within the department.

A section on Alumni with their messages shows our desire to keep our association with ex-students of the department alive and their industry-related advice shall help in shaping the mind of budding engineers of the department. Highlights of the Placement of students in an organization of repute have been included and are indicative of the goodwill of the Institute and the Department among prospective employers.

I congratulate the editorial team for their sincere effort to make this newsletter an informative document on our CST family's activities and varied talent. The editorial team has initiated something that will continue to help and guide present and upcoming students of the Department. Personally, I feel that students of MITS are equipped to set high standards and create an environment so that they excel in their areas of interest and accordingly guide more and more students of our institution, for the future.

Best Wishes for the success and bright future of "SPARK".

**Dr. N. Vijaya Bhaskar Choudary, Ph.D.,  
Secretary & Correspondent of the Academy.**



# Principal Message

Warm greetings!!

**I** am happy to release the 2022 issue of CST Department Technical Magazine –“SPARK”.

It gives me great pleasure to congratulate Students, Faculty and Staff of the CST department for the publication of the Technical Magazine – “SPARK”, enumerating the various departmental activities and achievements of our students and faculty during this semester.



Technology is changing the way people think and it is crucial to address a variety of engineering and technological challenges, as a result, significant progress has been made in the field of Computer Science and Technology by integrating knowledge, based on theoretical and practical aspects. The Department of Computer Science and Technology makes an effort to enhance this field through its research and teaching. It gives me an immense pleasure that the Department of Computer Science and Technology is releasing the Technical Magazine –“SPARK” for the year 2022-2023. The newsletter is a forum that brings out the best talent among the students and their multitalented skills which showcases their academic and extracurricular activities.

I wish the BEST OF LUCK to all the team members for the publication of SPARK.

Best Wishes ,

**Principal**  
**Dr. C. Yuvaraj**



# HoD's Message

Dear Readers,

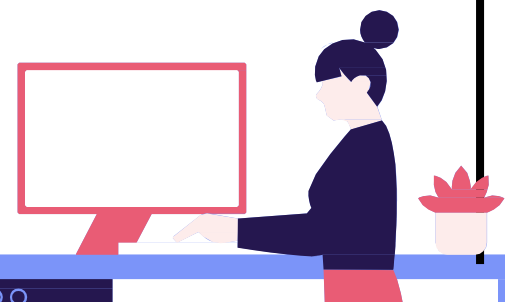
**W**e are more than enthralled to announce the release of our Technical Magazine for the Academic Year 2022.

“Little Drops of Water Make the Mighty Ocean”, a saying we witness coming true each day. Our Technical Magazine is just a droplet in the ocean that has already begun to form. This semester has been a successful one, a fact that will get lighter once you read this Technical Magazine. I would like to heartily thank all the students and faculty for putting their hearts and soul into this Technical Magazine.



The editorial team deserves a special mention for their immense hard work! This newsletter will throw light on the events held by the Department Computer Science & Technology (CST), achievements and the extra-curricular, co-curricular and academic success of the students and the faculty.

**Dr. Sreedevi**  
**Professor and HoD**  
**Department of CST**





## **The Current and Future Aspects of Artificial Intelligence and Deep Learning in Drug Development and Discovery**

**Dr. K.Dinesh**

**Associate Professor, Computer Science & Technology Department, MITS.**

The pharmaceutical industry has the potential to change due to artificial intelligence (AI), which is also known as machine intelligence. The pharmaceutical industry has seen a sharp surge in data digitization in recent years. However, digitalization makes it more difficult to find, evaluate, and use this knowledge to address intricate healthcare issues. Artificial intelligence, which is better suited to handle massive volumes of data, is encouraged by this. Artificial intelligence (AI) is a technology-driven system that uses a variety of technological tools and networks to mimic human intelligence.

It does not, however, pose an imminent threat to human life. Artificial Intelligence (AI) uses software and systems that can read and learn from data in order to accomplish goals and make judgments on its own. Its uses in the pharmaceutical industry are ever growing. From the bench to the bedside, artificial intelligence (AI) is expected to play a part in the development of pharmaceutical products because it can support logical drug design, help with decision-making, choose the best course of treatment for a patient, including tailored medications, manage clinical data collected and use it for subsequent drug development. Approximately 1060 chemicals make up the vast chemical space, which promotes the identification of many therapeutic molecules.

On the other side, the absence of cutting-edge technology makes medication development a laborious and expensive process, which can be avoided by using AI. AI is able to differentiate between lead and hit compounds, which expedites the process of optimizing structure design and validating the therapeutic target. AI has applications in drug design, chemical synthesis, drug screening, polypharmacology, and drug repurposing, to name a few. In spite of its advantages,

Large data concerns including scale, growth, diversity, and uncertainty face AI. Millions of compounds may be present in the data sets of pharmaceutical companies, and conventional machine learning techniques might not be able to handle them. Moreover, the drug development process is hindered by large and complex data from clinical trials, proteomics, genomics, and microarray analysis.

Stated differently, artificial neural networks and deep learning algorithms have altered the rules of the game. Peptide synthesis, ligand- and structure-based virtual screening, toxicity prediction, drug release and monitoring, pharmacophore modeling, quantitative structure-activity relationship, drug repositioning, polypharmacology, and physiochemical activity are just a few of the applications that have made use of deep learning techniques.

In summary, advances in deep learning and artificial intelligence have great potential to advance the design and development of rational medicine, which will ultimately benefit humanity.



## **Load Balancing In Cloud Computing**

Dr. Rajakumar R

**Associate Professor, Computer Science & Technology Department, MITS.**

IT industry is growing each day and so is the need for computing and storage resources. Large quantities of data are generated and exchanged over the network which further necessitates the need of more and more computing resources. Organizations, to better capitalize their investment, are opening their infrastructure to new found virtualization technologies like Cloud computing.

Cloud has helped enterprises leverage the benefits of computing resources which are shared over a virtualized environment. A lot of enterprises are already using cloud-based services in one or the other form. This brings us to the concept of load balancing in cloud.

Cloud Load balancing is the process of distributing workloads and computing resources across one or more servers. This kind of distribution ensures maximum throughput in minimum response time. The workload is segregated among two or more servers, hard drives, network interfaces or other computing resources, enabling better resource utilization and system response time. Thus, for a high traffic website, effective use of cloud load balancing can ensure business continuity. The common objectives of using load balancers are:

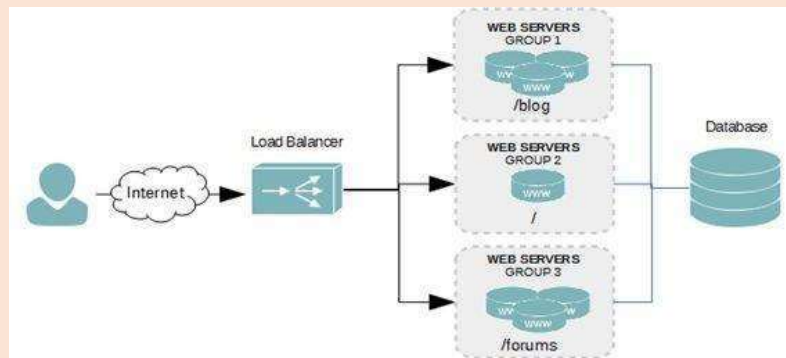
- To maintain system firmness.
- To improve system performance.
- To protect against system failures.

Cloud providers like Amazon Web Services (AWS), Microsoft Azure and Google offer cloud load balancing to facilitate easy distribution of workloads. For ex: AWS offers Elastic Load balancing (ELB) technology to distribute traffic among EC2 instances. Most of the AWS powered applications have ELBs installed as key architectural component.

Similarly, Azure's Traffic Manager allocates its cloud servers' traffic across multiple datacenters. How does load balancing work?

Load refers to not only the website traffic but also includes CPU load, network load and memory capacity of each server. A load balancing technique makes sure that each system in the network has same amount of work at any instant of time. This means neither any of them is excessively over-loaded, nor under-utilized.

The load balancer distributes data depending upon how busy each server or node is. In the absence of a load balancer, the client must wait while his process gets processed, which might be too tiring and demotivating for him. Various information like jobs waiting in queue, CPU processing rate, job arrival rate etc. are exchanged between the processors during the load balancing process. Failure in the right application of load balancers can lead to serious consequences, data getting lost being one of them.



Different companies may use different load balancers and multiple load balancing algorithms like static and dynamic load balancing. One of the most commonly used methods is Round-robin load balancing. It forwards client request to each connected server in turn. On reaching the end, the load balancer loops back and repeats the list again. The major benefit is its ease of implementation. The load balancers check the system heartbeats during set time intervals to verify whether each node is performing well or not.

So, the use of load balancing increases scalability, provide ability to handle sudden traffic spikes and flexibility to business users.

## **Opinion Summarization**

**Dr. Padma.**

**Associate Professor, Computer Science & Technology Department, MITS.**

Online services like Daily news, weather forecasts, banking transactions, shopping, social networking, blogging, and other services became very important in everyone's day-to-day schedule. The rapid advancement of web technologies has resulted in a significant increase in online buying and selling of products. Users' ability to express their satisfaction or criticism in the form of reviews has contributed to the growth of online purchases. Knowing these opinions and their associated sentiments is critical because they have a significant impact on an individual's or an organization's management system's decision-making. Considering the current situation, any product sold online receives thousands of reviews from customers all over the world. Hence going through this large number of reviews is a laborious task. Referring to merely a handful of them, on the other hand, would result in a biased decision. Thus opinion mining, sentiment analysis, and summarization become a serious necessity. Opinion mining is the process of finding phrases that contain an opinion about something, whereas sentiment analysis is the process of identifying the positivity or negativity of that opinion. Summarization is a way of presenting a large amount of information using limited words still maintaining its meaning and relevancy. Similarly, opinion summarization illustrates a summary for a large number of opinionated sentences. Opinion summaries include a well-organized overview of aspects/features, different textual summary formats, and visualization including structured summaries. The main purpose of summarising the opinion is to help users find and assimilate the broad variety of opinions fluently. The multiple methods used in the review of opinions touched on different research areas including text clustering, text mining, sentiment prediction, machine learning, NLP analysis, evolutionary algorithm, and so on.

The main aim in opinion summarization is to create summaries from the huge number of opinions on a product which can help customers to make wiser decisions on different

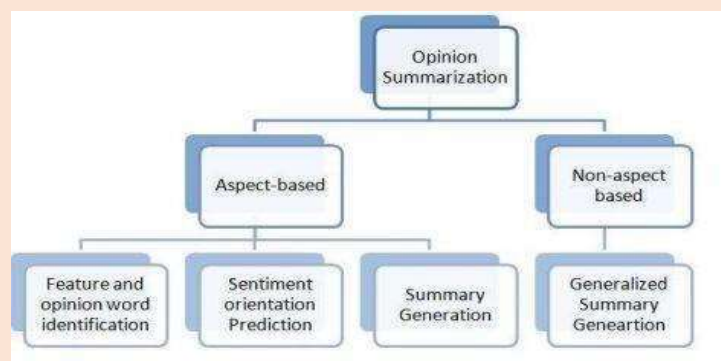
products/things.

There are two approaches for generating summaries based on the output type. Two main approaches for text summary generation are:

1. Extractive Summarization which uses AI methods and it does not involve rephrasing of text in the original document. In this input is taken from the document and presented in a readable form
2. Abstractive Summarization requires the ability to combine different perspectives in a natural language and it is defined in a single term as when a human is given a collection of text to summarize, he will rewrite the main points in his own words.

Text review techniques can be used in text collection and generation phase for opinion summarization. Opinion summarization is slightly different from old text summarization as the polarity of input opinion plays a significant role in opinion summary. It is not possible to review all opinions due to large data on web and redundancy in data. User review summarization helps the user in decision making for any product and helps him in buying.

Opinion summarization can be of two types: Aspect based and Non-aspect based as shown in Fig. 1



One of the opinion summarization strategies is feature-based or aspect-based opinion summarization, which provides brief but essential information comprising a summary of several aspects connected to the target product. Since it focuses on different features instead of giving general details about a product, it has become a more significant and demanded form of summarization. It is a way of generating summaries for a set of aspects or features of a specific product. The non-aspect-based Opinion Summarization technique produces a generalized summary over any target without considering its aspects or features. This summary is not bounded to any particular form or format. Different forms of these opinion summaries available include contrastive, abstractive, multi-lingual, entity-based, etc.

The opinion mining and summarization procedure includes three fundamental steps; Opinion Retrieval, Opinion Classification, and Opinion Summarization. The opinion summarization procedure uses two approaches (Feature-based summarization and Term Frequency-based summarization), in which the review text is preprocessed (sentence segmentation and tokenization), and then each sentence score and relevance is determined.

Opinion summarization can be simply implemented into real-world applications, saving time and effort for users. Politicians, for example, can assess their public image and businesses can assess their clients using Twitter opinions. It also plays an important part in social media semantic analysis and social media analytics. Despite multiple research attempts, existing opinion summary studies still have several shortcomings that need to be addressed.





5G

# 5G and the Future of Internet of Things (IoT)

The objective of the technology known as 5G, which is a breakthrough, is to create a truly wireless future free from the limitations of previous generations. With all its significant and cutting-edge capabilities, 5G technology is expected to be quite popular and in high demand in the future. It provides enormous bidirectional bandwidth. It creates a wireless universe free from access and zone restrictions. It establishes a single, worldwide standard. The highly attractive and efficient aspects of 5G technology are its sophisticated charge interfaces. Connectivity speeds of up to 25 Mbps can be achieved by 5G technology.

Virtual private network support is also provided by 5G technology. No one can simply breach the system thanks to increased security, although 4G technology presents a challenge. To put it simply, most people think that 5G will be quicker, smarter, and better than 4G. 5G technology is 100 times quicker than 4G technology in terms of speeds. The use of 5G will address bandwidth problems. The use of 5G technology has several significant advantages, including What if, What if you could quickly identify the stolen phone? What if your smartphone can find the best server and possibly more? Along with being quicker than current 4G, 5G technologies have the potential to completely transform a number of other industries, including energy, manufacturing, healthcare, and the automobile.

5G will take the place of the current system and offer download speeds of up to 10 to 20 GBPS. It is comparable to a wirelessly accessible fiber optic internet connection. Together with small cells, towers, and masts, the two components, the "Radio access network" and the "Core network," are specialized in-building and residential systems that link wireless devices and mobile users to the main core network. Development with a supercharged 5G wireless network is primarily facilitated by low latency and IOT. The Internet of Things (IoT) links every appliance with a sensor, and with the aid of 5G technology, industries like logistics, shipping, and smart farming might go even further.

**SAI DEVIKA (4<sup>TH</sup> CST-C)**  
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## **Beyond Antennas: Unleashing the Power of Smart Towers in 5G Networks**

In 2019, QOGNO unveiled their Smart Towers at the Indian Mobile Congress. The newest project using 5G technology to be made in India is the smart tower. The smart tower is a scalable, expandable, modular structure that integrates end-to-end city-centric services and facilitates sector-based transactions and the acquisition of useful information. They are made to be able to meet the administrative needs of municipalities, a wide range of citizen needs, and public safety requirements. Multiple targets can be served by the smart towers. It is divided into distinct sections for different purposes. Included in the segment are security cameras, drone systems, smart banners, and emergency services.

Emergency services is the first and bottom component. In the event of an accident in the area, individuals can press a switch to activate security services, which include police and ambulance response times as well as prompt emergency assistance. The next component monitors viewers of the banners and ads: the "smart banner" portion. The smart camera that is part of this area will track a person's eye movement while accounting for the number of persons who have viewed the banners and for what duration. Three separate, parallel-installed cameras with a greater field of vision are placed above it for security reasons.

These cameras pick up on people's information when they attempt to avoid the traffic systems. Thus, traffic control is completed as of this part. The drone system is located in the last and uppermost section of the smart skyscraper. In summary, this smart skyscraper has all the essential features that the city requires for it to function properly. This tower meets all of a city's essential requirements, including security and emergency services. The business has previously constructed these kinds of towers in a few locations throughout Chennai. Additionally, the installation will likely cost between 80 and 90 lacks initially, and it will undoubtedly be installed across the nation in the upcoming years..

**Rohitha. G (3<sup>RD</sup> CST-B)**  
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# Exploring Bluejacking Techniques: A Playful Dive into Wireless Messaging

Bluejacking, a term coined in the early 2000s, refers to the art of sending unsolicited messages to Bluetooth-enabled devices within close proximity. Unlike malicious hacking, bluejacking is often done for amusement rather than harm. This article delves into the various techniques employed in bluejacking, shedding light on the methods and the evolving landscape of this wireless communication phenomenon.

Bluejacking was reportedly first carried out between 2001 and 2003 by a Malaysian IT consultant who used his phone to advertise Ericsson to a single Nokia 7650 phone owner in a Malaysian bank. He also invented the name, which he claims is an amalgam of Bluetooth and ajack, his username on Esato, a Sony Ericsson fan online forum. Jacking is, however, an extremely common shortening of "hijack", the act of taking over something. Ajack's original posts are hard to find, but references to the exploit are common in 2003 posts. Another user on the forum claims earlier discovery, reporting a near-identical story to that attributed to Ajack, except they describe bluejacking 44 Nokia 7650 phones instead of one, and the location is a garage, seemingly in Denmark, rather than a Malaysian Bank. Also, the message was an insult to Nokia owners rather than a Sony Ericsson advertisement.

## Steps To Bluejack A Device

1. Bluejacker opens his contacts and creates a new contact.
2. He does not save a name and number rather he saves the message in place of the contact and does not need to save a number (It is optional if he wants to send a business card, he can save the number).
3. He would scan for nearby Bluetooth devices.
4. He would then share the contact with the Bluetooth device connected.
5. The message will reach the recipient and he will have no clue as to who had sent the message.

**Hima Bindu. P (3<sup>RD</sup> CST-B)**  
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# Empowering Microservices: Unveiling Azure Spring Cloud, the Fully Managed Service for Spring Boot Applications

As customers have moved their workloads to the cloud, we've seen a growth in the use of cloud native architectures, particularly micro-services. Micro-service-based architectures help improve scalability and velocity but implementing them can pose challenges. For many Java developers, Spring Boot and Spring Cloud have helped address these challenges, providing a robust platform with well-established patterns for developing and operating micro-service Applications. But creating and maintaining a Spring Cloud environment requires work, such as setting up the infrastructure for dynamic scaling, installing and managing multiple components, and wiring up the application to your logging infrastructure. To help make it simpler to deploy and operate Spring Cloud applications, together with Pivotal, Microsoft has created Azure Spring Cloud. Azure Spring Cloud is jointly built, operated, and supported by both Pivotal and Microsoft. This means that you can use Azure Spring Cloud for your most demanding applications and know that both Pivotal and Microsoft are standing behind the service to ensure your success. High productivity development Azure Spring Cloud abstracts away the complexity of infrastructure management and Spring Cloud middleware management, so you can focus on building your business logic and let Azure take care of dynamic scaling, security patches, compliance standards, and high availability. With a few clicks, you can provision an Azure Spring Cloud instance. After configuring a couple of dependencies in your pom file, your Spring Cloud app is automatically wired up with Spring Cloud Config Server and Service Registry.

Furthermore, you can deploy and scale Spring Boot applications in seconds. Ease of monitoring With out-of-the-box support for aggregating logs, metrics, and distributed app traces into Azure Monitor, you can easily visualize how your applications are performing, detect and diagnose issues across micro-service applications and their dependencies, drill into monitoring data for troubleshooting and gain a better understanding of what end-users do with your apps.

Open-source innovation with Spring integrations Azure Spring Cloud sets up the compute foundation for cloud-native Spring applications. From there, Azure Spring Cloud makes it simple to connect to data services such as Azure SQL Database, MySQL, PostgreSQL, or Cosmos DB to enable enterprise-grade end-user authentication and authorization using Azure Active Directory, to bind cloud streams with Service Bus or Event Hubs, and to load and manage secrets with Azure Key Vault.

**Harshitha. B (2<sup>ND</sup> CST-B)**  
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# ***Unleashing the Power of Deep Networks: Transformative Applications in Industrial Internet of Things (IIoT)***

*Deep Network is rapid growth of connected technologies, the industrial world is transforming in a trend that conforms to a number of headlined names including the fourth industrial revolution, smart manufacturing, and Industrial Internet of Things (IIoT). Sensor technology has been around in industries for over a decade but the emergence of Big Data coupled with manufacturers' increased software proficiencies, pressures on inventory levels and lead times have led many businesses to procure sensor-enabled machinery. That situation has enabled researchers to search for combining advanced technologies for better outcomes in the context of industrial applications. Industry 4.0 enables industrial advancements with the help of advanced computing, analytics, low cost sensing, and new levels of connectivity enabled through the Internet. Some of known technologies supporting this revolution are cloud services, big data analytics, and pervasive, intelligent, sensing technologies. In modern industry, productivity, quality, reliability, and safety heavily depend on the performance of the sensors employed. They form an interface between the production equipment and the surrounding environment providing feedback based on the results of the executed operations. The significant benefits of using intelligent sensing technology in industries are accuracy and consistency, which enable functions such as picking, placing, labeling, and printing to be performed at higher production rates, leading to low wastage, minimal down time, and better-quality control. Though intelligent sensors are indispensable in Industry 4.0, there are still existing obstacles for sensors to be widely adopted in the production environment.*

*For example, it is not possible to distinguish between correct and incorrect information provided by a sensor, unless additional information provided by another sensor is used. Also, in addition to fulfilling their primary role, sensors used in industry have to possess additional functionality features such as self-diagnostics, self-calibration, autonomous operation with minimum power consumption, wired or wireless sensor network (WSN) compatibility, and a small form factor. It is also certain that there is a need for extremely robust and reliable industrial sensors. In order to meet all the aforementioned requirements, such sensors need to possess a certain level of intelligence or smartness. Considering today's conditions that may need better analyzing of great amount of data. One trendy and less followed idea regarding that is employment of Deep Learning, which is current, big approach of the field of Artificial Intelligence. These days, Deep Learning has a great importance because of its network models achieving effective results in multidisciplinary applications. Moving from that, there is an opportunity to ensure high level of accurate intelligence or smartness required for sensors in Industry 4.0 applications. Power of deep networks can be used for better organization of intelligent sensors, optimizing their roles within the industrial system and even enabling them to have support from an advanced system giving layered role models for multi-sensors.*

**SAI GANIKA(3<sup>RD</sup> CST-C)  
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# LUNAR TRANSFORMATION: EXPLORING THE POSSIBILITY OF THE MOON BECOMING A SECOND EARTH

In 2019, we are celebrating the 50th anniversary of NASA's momentous Apollo expeditions to the Moon. The samples brought back by the astronauts, and the fieldwork those astronauts performed on the lunar surface, cemented the Moon's status as the cornerstone of the solar system. It is not an exaggeration to say that the Apollo expeditions transformed our understanding of our solar system, and, in fact, most of the discoveries made in planetary science since the 1960s can trace directly, or indirectly, from the scientific results of those Apollo expeditions.

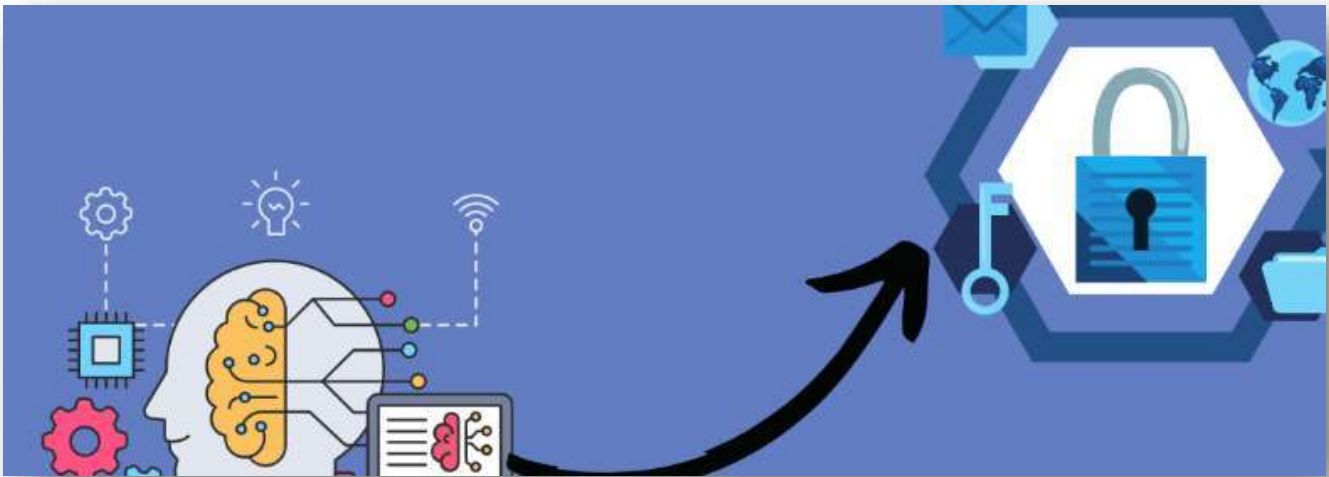


Although some erroneously proclaim that the Moon is “Been there, done that”, nothing could be further from the truth. After a long hiatus, beginning in the first years of the 21st century, there has been a resurgence of interest in the Moon, including the Kaguya mission by the Japanese Aerospace Exploration Agency (JAXA); the Chandrayaan-1 mission by the Indian Space Research Organizations (ISRO); four Chinese missions:- 2 orbiters (Chang'E-1 and -2) and two landed missions with rovers (Chang'E-3 and -4); as well as four NASA missions: the Lunar Reconnaissance Orbiter (LRO), the Lunar Crater Remote Observation Sensing Satellite (LCROSS), the Lunar Atmosphere and Dust Environment Explorer (LADEE), and the Gravity Recovery and Interior Laboratory (GRAIL). Taken collectively, the results from these missions have shown that the Moon is a far more interesting, and far more valuable, destination for future exploration than was perceived even during the Apollo era. Results from recent lunar missions have only increased the interest in a vigorous program of lunar exploration and utilization. The 50th anniversary of Apollo 11 presents the perfect opportunity to take a look to the future. The Lunar Exploration Analysis Group (LEAG), the community group started in 2004 that organizes and leads the large and diverse lunar exploration community, has developed the Lunar Exploration Roadmap (LER) (LEAG 2016). Featuring inputs from engineers, planetary scientists, commercial entities, and policymakers.

**MADAUMIDHAN(4<sup>TH</sup> CST)**  
**19691A2863**

# ***Bridging the Gap: Machine Learning and Deep Learning in Cybersecurity - Challenges and Promises***

***M***achine learning (ML) and deep learning (DL) play significant roles in cybersecurity, helping organizations enhance their ability to detect, prevent, and respond to cyber threats. ML and DL technologies are powerful tools in the cybersecurity arsenal, providing improved threat detection, faster response times, and the ability to adapt to the ever-evolving nature of cyber threats. As the field continues to advance, integrating these technologies will become increasingly crucial for effective cybersecurity strategies.



*Things that have garnered and sparked a great deal of academic attention in the previous decade are Machine learning (ML) and Deep learning (DL). In most people's daily lives, online communities and social media have taken the lead recently, however, this trend comes with serious societal risks. Protecting sensitive data, data networks, and computers against malicious cyber attacks is a difficult task. Cyber security is essential for the safety of our data. Deep learning and machine learning, two relatively new technologies, are merged with cyber-attacks to give a solution to these issues. This article provides a summary of recent research into applying DL to the problem of cyber security, and it examines the many obstacles that must be overcome before this promising field can be fully implemented.*

**LAKSHMIKANTH.R(3<sup>RD</sup> CST)  
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