Gayatri Vidya Parishad College Of Engineering for Women

Department of Information Technology

VOLUME-2

SPIKE-IQ 2k17

From The Principals Desk

It is pleasure to know that GVPCEW is bringing out the magazine of IT department "***SPIKE-IQ***" for the year 2017-2018.

This institution constantly strives in the all-round development of the students through its endless efforts. SPIKE-IQ is one such endeavor providing a wide spectrum of engineering and artistic edifice, swaying from serious thinking to playful inventiveness. The inspiring women students at GVPCEW are brimming with zeal for life empowering themselves with skills and creativity.

I am happy that there is a dedicated team of staff and students who have brought out ***SPIKE-IQ***. They have presented the stupendous achievements of IT students of GVPCEW in the field of academics, sports and extra-curricular activities.

I extend my sincere congratulation to the editorial board and all those who have shelved their valuable time to elevate this magazine to unprecedented heights. I wish the readers had a delightful reading. May all our students soar high in uncharted skies and bring glory to the world and their profession with the wings of education.

-Dr. E.V. Prasad

From The Editorial Desk

It gives an immense joy and satisfaction to introduce our very own department magazine- SPIKE-IQ 2K17. Here comes 'SPIKE-IQ 2K17', the magazine of GVPCEW from the IT department. The name of the magazine may see peculiar, but it just means 'the speed at which the technological innovation or advancement is occurring'. So this time, it is the dedication of students, which attempts to bring out the talent concealed within our student community along with teachers. The willingness to share knowledge, concerns and special insights with fellow beings has made this magazine possible. This magazine includes technical articles, biography of a renowned scientist as well as facts regarding computer science, few tricky puzzles with funny corner and exhibits the literary skills and the achievements of students. These contributions have required a generous amount of time and effort. Thank you very much for all the editorial team members who worked for this magazine. It is very glad to take the opportunity of expressing our considerable appreciation to all the contributors of this magazine. Lastly, the contributors and readers of 'SPIKE-IQ 2K17' are always welcome to send us your invaluable feedback and ideas for further improvement of this magazine.

Department Vision:

The department of IT strives to produce competent professionals who are technically sound and ethically strong for IT industry.

Department Mission:

- Provide quality training that prepares Students to be technically component for the Industrial and Societal needs.
- Facilitate an environment that promotes continuous learning to face the challenges in the IT sector.
- Provide opportunities for learning, leadership and communication skills.

Program Educational Objectives:

After successful completion of the program, the graduates will be able to:

- PEO-1: Apply analyze and solve complex Engineering problems using Emerging IT technologies with the help of fundamental knowledge in mathematics, science, and engineering.
- PEO-2: Comprehend Analyze, Design and Create innovative computing products and solutions for real life problems.
- PEO-3: Inculcate the necessary skills to engage in lifelong learning.

Program Specific Outcomes:

Engineering graduates will be able to:

- PSO-1: Develop Software Application s by analyzing, designing and implementing with cutting edge technology to address the needs of IT industry.
- PSO-2: Apply the knowledge of Data Science, machine learning, image processing and allied areas to obtain optimized solutions for real time problems.

Faculty Article

Deep Learning: A Journey to Artificial Intelligence through Neural Networks

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Introduction:

The Evolution of data, computing power and algorithms lead to boost the Artificial Intelligence more powerful and efficient. Artificial intelligence (AI) is a very large research field, where machines show cognitive capabilities such as learning behaviors, proactive interaction with the environment, inference and deduction. Machine learning (ML) is a sub branch of AI that focuses on teaching computers how to learn without the need to be programmed for specific tasks, because it can learn from the data. Machine learning approach machine can be trained at specific task later tested on real time data.

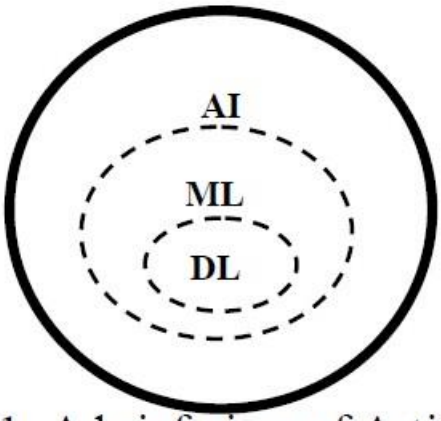

Figure 1: A brief view of Artificial Intelligence

The limitation of machine learning, it needs human effort, expertise, domain barrier and shallow architecture. Another cumbersome of ML is as data grows learning and prediction cannot be accurate by using traditional architectures and learning algorithm. Deep Learning (DL) is deep structure learning uses an artificial neural network that mimics human brain. Deep Learning uses family of algorithms that implements on network through many hidden layers. These networks are so deep, can be configured or trained using Central processing Unit (CPU). Graphically Processing Unit (GPU) or Tensor Processing Unit (TPU).

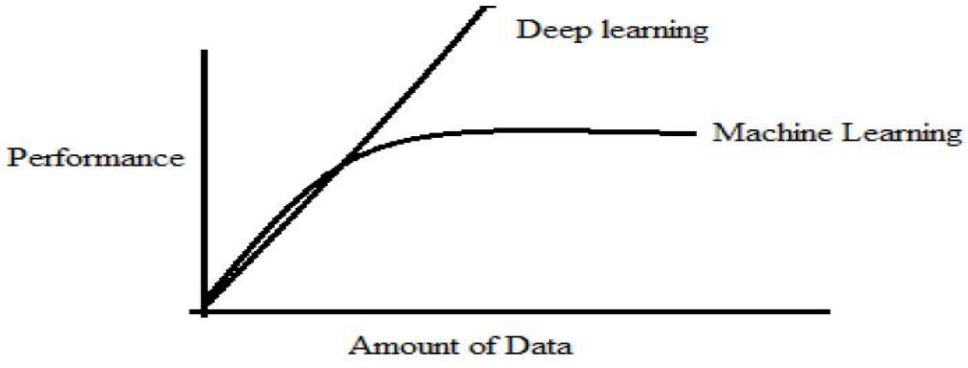

Figure 2: Performance of Deep Vs Machine learning

Deep learning can be done through multiple hidden layers; each layer consists of multiple neuron units. A single neuron unit as shown in figure 3, is mathematical model or system, capable of modeling and processing nonlinear relationships between inputs and outputs in parallel. The simplest neural network is the perceptron, consists of a single neuron. Much like biological neuron, the single artificial neuron is a simple tree structure, which has input nodes and a single output node.

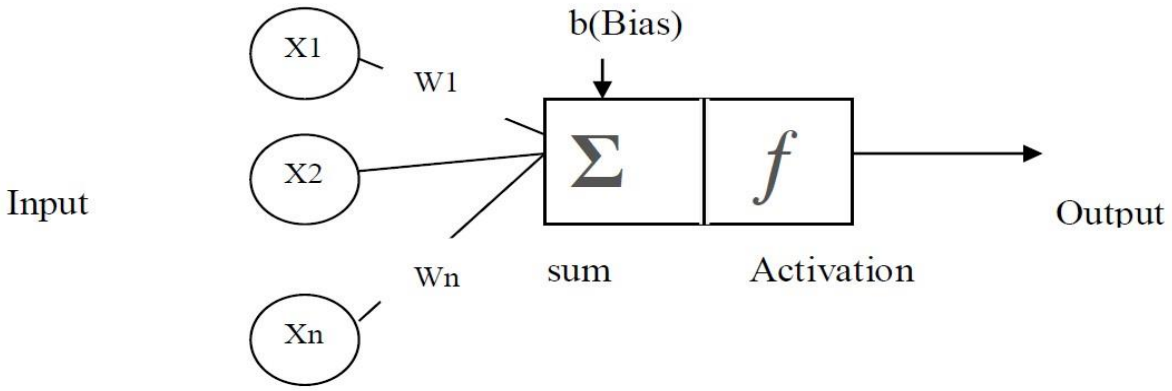

Figure 3: Model of Artificial Neuron

Model takes input features, multiplied with weights of connection all the values of the input nodes and added with bias. Together they are used as inputs for activation function, which turns produce output.

$$\text{Output of neuron} = f(\Sigma wi * xi + b)$$

Deep learning can be used several areas such as real time online language translation for online chats, Document classification, Image recognition, HealthCare, social networking filtering, Forecasting and Expert Systems.

Software or Packages for Deep Learning: an Artificial Neaural Network Architectures can be implemented by using various packages. The list is given below.

- Deeplearning4j– Deeplearning4J is an Apache 2.0-licensed, open-source, distributed neural net library written in Java and Scala.
- Caffe -Caffe is a deep learning framework made with expression, speed, and modularity in mind.
- Matlab Deep Learning – Matlab Deep Learning Tools
- OpenNN- is an open source class library written in C++ programming language, which implements neural networks, a main area of deep learning research.
- Neural Designer- is an innovative deep learning tool for predictive analytics.
- Microsoft cognitive Toolkit (CNTK) – is a unified deep-learning toolkit by Microsoft Research.
- PyTorch- is a port to the Torch deep learning framework, which can be used for building deep neural networks and executing tensor computations.
- Keras-Keras is a minimalist Python library for deep learning that can run on top of Theano or Tensor Flow. It was developed to make developing deep learning models as fast and easy as possible for research and development. It runs on Python 2.7 or 3.5 and can seamlessly execute on GPUs and CPUs given the underlying frameworks.
- MXNet- A truly open source deep learning framework suited for flexible research prototyping and production.
- Apache Singa: an open source deep learning library that provides a flexible architecture for scalable distributed training. It is extensible to run over a wide range of hardware and has a focus on health-care applications.

References:

1. Deep learning with Keras by Antonio Gulli, sujit Pal.
2. Deep learning with python by Jason Brownlee.
3. https://www.ibm.com/downloads/cas/
4. https://www.tcs.com/content/dam/tcs/pdf/technologies/artificialintelligence/abstract

Puzzles:

What number comes inside the circle?

A. 9
B. 4
C. 5
D. 6

View Answer

Answer & Explanation:

Answer : 6

Explanation :

Looking at the diagram in rows, the central circle equals half the sum of the numbers in the other circles to the left and right of the centre.

Student Article

ANTI-HIV USING NANOROBOTS

G. Khyati Priya, 17JG1A1222, Department of IT

Nanorobotics is an emerging technology field creating machines or robots whose components are at or near the scale of a nanometer (10−9 meters). More specifically, Nanorobotics (as opposed to micro robotics) refers to the nanotechnology engineering discipline of designing and building nanorobots, with devices ranging in size from 0.1–10 micrometers and constructed of nanoscale or molecular components. The terms nanobot, nanoid, nanite, nanomachine, or nanomite have also been used to describe such devices currently under research and development. Nanomachines are largely in the research and development phase, but some primitive molecular machines and nanomotors have been tested. An example is a sensor having a switch approximately 1.5 nanometers across, able to count specific molecules in a chemical sample. The first useful applications of Nanomachines may be in nanomedicine. For example, biological machines could be used to identify and destroy cancer cells. Another potential application is the detection of toxic chemicals, and the measurement of their concentrations, in the environment. Rice University has demonstrated a single-molecule car developed by a chemical process and including Buckminsterfullerene (buckyballs) for wheels. It is actuated by controlling the environmental temperature and by positioning a scanning tunneling microscope tip. Another definition is a robot that allows precise interactions with nanoscale objects, or can manipulate with nanoscale resolution. Such devices are more related to microscopy or scanning probe microscopy, instead of the description of nanorobots as molecular machines. Using the microscopy definition, even a large apparatus such as an atomic force microscope can be considered a nanorobotic instrument when configured to perform nanomanipulation. For this viewpoint, macro scale robots or micro robots that can move with nanoscale

precision can also be considered nanorobots.

I. INTRODUCTION

A. Nanorobots

Nanorobotics is the technology of creating machines or robots at or close to the microscopic scale of nanometers (10-9 meters). Nanorobots would be typically devices ranging in size from 0.1-10 micrometers; they could work at atomic, molecular and cellular level. Nanorobots are to likely be constructed of carbon atoms, generally in diamond structure because of inert properties and strength, glucose (or) natural body sugars and oxygen might be source at propulsion, Nanorobots will respond to acoustic signals.

B. HIV

HIV stands for Human Immunodeficiency Virus. Like all viruses, HIV cannot grow or reproduce on its own. In order to make new copies of itself it must infect the cells of a living organism. HIV belongs to a special class of viruses called retroviruses. Within this class, HIV is placed in the subgroup of lent viruses. Outside of a human cell, HIV exists as roughly spherical particles (sometimes called virions). The surface of each particle is studded with lots of little spikes. An HIV particle is around 100-150 billionths of a meter in diameter. That is about the same as 0.1 microns, one twentieth of the length of an E. coli bacterium, one seventieth of the diameter of a human CD4+ white blood cell. Unlike most bacteria, HIV particles are much too small to be seen through an ordinary microscope. However they can be seen clearly with an electron microscope.

II. THE LATEST DRUG USED AGAINST HIV

Zidovudine is the latest known drug that is used for treatment of aids. This drug has an affinity to the HIV genome (RNA molecule) and they binds to it before reverse transcriptase starts working and as a result DNA cannot be synthesized. But any time this drug can lose its efficiency as mutation at the codon no. 67,70 and 215 will change the conformation which will result in the reduction of affinity of Zidovudine towards viral genome and as a result RT will start its action and viral genome will be replicated and integrate with host genome.

III. TREATMENT OF AIDS BY NANOROBOTS

Zidovudine can be used to resist the HIV but the virus cannot be destroyed. Destruction of viral genome is possible by using nanorobots. This type of nanorobots will consists of a nano-biosensor developed by nanoelectronics engineers, a data converter, and a container containing high concentration (say 20 u/microlitre) of DNase and RNase enzyme.

IV. REASONS FOR APPLYING NANOTECH TO BIOLOGICAL SYSTEM

Most animal cells are 10,000 to 20,000 nanometers in diameter. This means that nanoscale devices (having at least one dimension less than 100 nanometers) can enter cells and the organelles inside them to interact with

DNA and proteins. Tools developed through nanotechnology may be able to detect disease in a very small amount of cells or tissue. They may also be able to enter and monitor cells within a living body. Nanotechnology could make it possible to run many diagnostic tests simultaneously as well as with more sensitivity. In general, nanotechnology may offer a faster and more efficient means for us to do much of what we do now.

V. COMPONENTS OF AN ANTI-HIV NANOROBOT

A. Nanobiosensor

The Ab for the Ag gp41 & gp120 will be tagged on its surface. Therefore, whenever it will come in contact of an infected cell the Ab will react with that by an immunochemical reaction and will identify this.

B. Nanochip

It's a chip, which will receive the signal from nanobiosensor and will perform its job.

C. Nanotube

It's a tube in nanoscale. On receiving + ve signal, the nanotube will be injected into the nucleus of the cell by nanochip.

D. Nanocontainer

A nanocontainer will contain highly concentrated DNase and RNase enzyme, which will be delivered into the infected cell and will cleave the whole genomic DNA into single nucleotides.

VI. PROCESS

The function of the biosensor is to identify a particular compound. In this case the biosensor will contain a particular antibody. The gp41 and gp120 are two unique HIV envelope protein, which is found in the cell membrane of the infected cell. The antigen (gp41 and gp120 protein) and antibody reaction will give the proper signal. In case of infected cell, only this reaction will take place as those viral proteins are found in the cell membrane of the infected cell only. Getting the +ve signal the nanorobot will inject its nanotube into the nucleus of the infected cell and release the DNase as well as RNase enzyme into the cell. The DNase enzyme is not sequence specific and as a result, it will cleave the whole genomic DNA containing the viral genome into single nucleotides

Once the viral genome loses its sequence it loses its viral effect and after the digestion of the completely genomic DNA the cell undergoes normal programmed cell death called apoptosis. Thus the infected cell of the diseased body can be destroyed to finish off the viral genome in the body . Nanorobot performing operations on blood cells.

VII. ADVANTAGES

This dreaded disease affects more than million people in this world. Currently there is no Permanent vaccine or medicine is available to cure the disease. The currently available drugs can Increase the patient's life to a few years only, so the invention of this nanorobot will make the patients to get rid of the disease. As the nanorobot, do not generate any harmful activities there is no side effect. It operates at specific site only. The initial cost of development is only high but the manufacturing by batch processing reduces the Cost.

VIII. DISADVANTAGES

The nanorobot should be very accurate, otherwise harmful effects may occur. The initial design cost is very high. The design of this nanorobot is a very complicated one.

IX. CONCLUSION

The paper is just a theoretical justification. But the recent advancement in the field of Nanotechnology gives the hope of the effective use of this technology in medical field. This is the beginning of nano era and we could expect further

Improvements such as a medicine to AIDS using nanotechnology.

Review on Mitigation of Modern Distributed Supercomputing

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ABSTRACT:

High _performance scientific applications require more and more compute power .The concurrent use of multiple distributed compute resources is vital for making scientific progress. The distributed computing is done on many systems to solve a large-scale problems. The distributed computing system uses multiple computers to solve large scale problems over the internet. It becomes data-intensive and network centric.

KEYWORDS:

jungle, cluster, grid, p2p, cloud, distributed computing paradigms

INTRODUCTION:

The introduction of computer networks in the 1970's led to the development of distributed systems (Andrews, 1999). A distributed system is a collection of independent computers that appears to the users as a single computer (Tanenbaunam &Steen, 2006) and provides a single system view. The coordinated aggregation of these distributed computers allows access to a large amount of computing. Distributed computing has been an essential component of scientific computing for decades. It consists of a set of processes that cooperate to achieve a common specific goal. It is widely recognized that Information and Communication Technologies (ICTs) have revolutionized the everyday practice. Social networks represent a stepping stone in the on-going process of using the Internet to enable the social manipulation of information and culture. Mostly social network sites are implemented on the concept of large distributed computing systems. These are running in centrally controlled data centre. However, the trend in these massively scalable systems is toward the use of peer-to-peer, utility, cluster, and jungle computing. The utility computing is basically the grid computing and the cloud computing which is the recent topic of research. This classification is well shown in the Figure 1. With the increasing heterogeneity of the underlying hardware, the efficient mapping of computational problems onto the 'bare metal' has become vastly more complex. There are many challenges of distributed computing as follows: Transparency means to hide distribution from the users at the high levels and to hide the distribution from the programs at the low levels. There are more forms of transparency as Location, Migration, Replication, Concurrency, and Parallelism. Flexibility should be easy to develop. Reliability encompasses some factors like no data loss, secure system, and fault tolerant systems. Performance should be high. Scalability should scale indefinitely.

This review paper covers the distributing technologies. In the section 3rd peer-to-peer computing is elaborated; in section 4th, the cluster computing; in section 5th utility computing which has the subsections about grid computing and the cloud computing; and in section 6th, the jungle computing. This paper gives a good introductory knowledge about the distributing computing

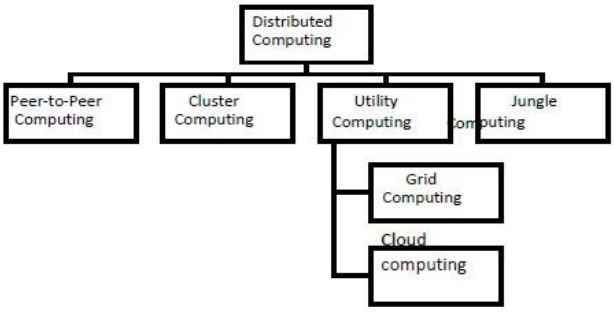

Figure 1: Classification of Distributed Computing

I. PEER TO PEER COMPUTING

Peer-to-peer (P2P) networking has been working primarily on the scalability issues inherent in distributing resources over a large number of networked processes. In a P2P system, every node acts as both a client and a server, providing part of the system resources. Peer machines are simply client computers connected to the Internet. All client machines act autonomously to join or leave the system freely. This implies that no master-slave relationship exists among the peers. No central coordination or no central database is needed. In other words, no peer machine has a global view of the entire P2P system. The system is self-organizing with distributed control as shown in the figure 2.

Figure 2:p2p Balancing

2. CLUSTER COMPUTING

A cluster computing comprises a set of independent or stand-alone computing resource. A cluster is local in that all of its component subsystems are supervised within a single administrative domain, usually residing in a single room and managed as a single computer system. The components of a cluster are connected to each other through fast local area networks. To handle heavy workload with large datasets, clustered computer systems have demonstrated impressive results in the past.

Components of Cluster Computing:

There are so many components of the cluster computing as follows:

1. High Performance Computers like PCs, Workstations etc.

2. Micro- kernel based operating systems.

3. High speed networks or switches like Gigabit Ethernets.

4. NICs (Network Interface Cards)

5. Fast Communication Protocols and Services

Cluster Middleware which is hardware, Operating system kernels, applications and subsystems.

Parallel Programming Environment Tools like compilers, parallel virtual machines etc.

Sequential and Parallel application.

Clusters are usually deployed to improve performance and availability over that of a single computer, while typically being mummer cost effective than single computers of comparable speed or availability.

Computer clusters emerged as a result of convergence of a number of computing trends including the availability of low cost microprocessors, high speed networks and software for high performance.

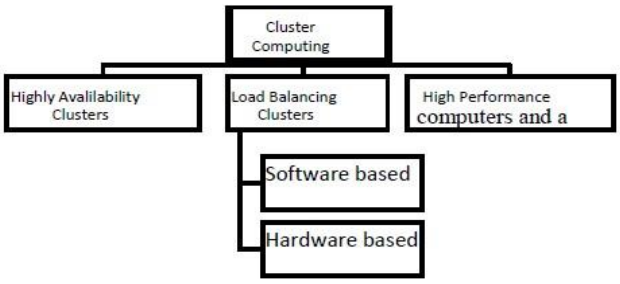

Figure 3: Overview of Cluster Computing

3. UTILITY COMPUTING

Utility computing is envisioned to be the next generation of Information Technology evolution that depicts how computing needs of users can be fulfilled in the future IT industry. Its analogy is derived from the real world where service providers maintain and supply utility services, such as electrical power, gas, and water to consumers. Consumers in turn pay service providers based on their usage. Therefore, the underlying design of utility computing is based on a service provisioning model, where users (consumers) pay providers for using computing power only when they need to. Utility computing focuses on a business model, by which customers receive computing resources from a paid service provider. All grid/cloud platforms are regarded as utility service providers. However, cloud computing offers a broader concept than utility computing.

3.1GRID COMPUTING

The aim of Grid computing is to enable coordinated resource sharing and problem solving in dynamic, multi- institutional virtual organizations.

As an electric-utility power grid, a computing grid offers an infrastructure that couples computers, software/middleware, special instruments, and people and sensors together. Grid is often constructed across LAN, WAN, or Internet backbone networks at regional, national, or global scales. Enterprises or organizations present grids as integrated computing resources. They can be viewed also as virtual platforms to support virtual organizations. The computers used in a grid are primarily workstations, servers, clusters, and supercomputers. Personal computers, laptops and PDAs can be used as access devices to a grid system. The grids can be of many types as; Knowledge, Data, Computational, Application Service Provisioning, Interaction or Utility.

These have many pros and cons. Pros are like; these are capable to solve larger, more complex problems in a shorter time, these are easier to collaborate with other organizations, and these make better use of existing hardware. Cons are like; Grid software and standards are still evolving, learning curve to get started, and non- interactive job submission.

3.2CLOUD COMPUTING

Cloud computing is another form of utility computing. It is a new term in the computing world and it signals the advent of a new computing paradigm. This new paradigm is quickly developing and attracts a number of customers and vendors alike. The quick development of cloud computing is being fuelled by the emerging computing technologies which allows for reasonably priced use of computing infrastructures and mass storage capabilities. It also removes the need for heavy upfront investment in Information Technology (IT) infrastructure

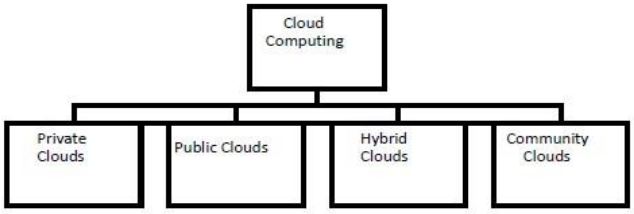

Figure 4: classification of cloud computing

3.2.1 Public clouds in this deployment the cloud infrastructure is accessible to general public and shared in a pay as you go model of payment. The cloud resources are accessible via the internet and the provider is responsible for ensuring the economies of scale and the management of the shared infrastructure. In this model clients can choose security level they need, and negotiate for service levels. Amazon Web Services EC2 is a public cloud. It is accessible to the general public.

3.2.2 Private clouds are another deployment model for cloud services. In this model the cloud resources are not shared by unknown third parties. The cloud resources in this model the general public does not have access to the private cloud neither does the organization use the public cloud.

3.2.3 Hybrid clouds as its name implies is a model of deployment which combines different clouds for example the private and public clouds. In this model the combined clouds retains their identities but bound together by standardized technology. In this type of cloud the general public does not have access to the cloud, but the organization uses infrastructure in both the public and private cloud.

3.24 Community clouds are the fourth deployment model that can be used to deliver cloud computing services. In this model the cloud infrastructure is shared by multiple organizations or institutions that have a shared concern or interest such as compliance considerations, security requirements. This type of cloud may be managed by the organization or by a third party and may be located on- premises or off-premises. In this type of cloud both the public and the organizations forming the community cloud have access to the cloud services offered by the community cloud.

4. Jungle Computing

Jungle computing is a simultaneous combination of heterogeneou hierarchical, and distributed computing resources. In many realist scientific research areas, domain experts are being forced int concurrent use of multiple clusters, grids, clouds, desktop grid independent computers, and more. Jungle computing refers to the u of diverse, distributed and highly non-uniform high performanc computer systems to achieve peak performance. These ne distributed computing paradigms have led to a diverse collection resources available to research scientists, including stand-alo machines, cluster systems, grids, clouds, desktop grids, etc. as show in the Figure 4 and this varied collection is named as jung computing.

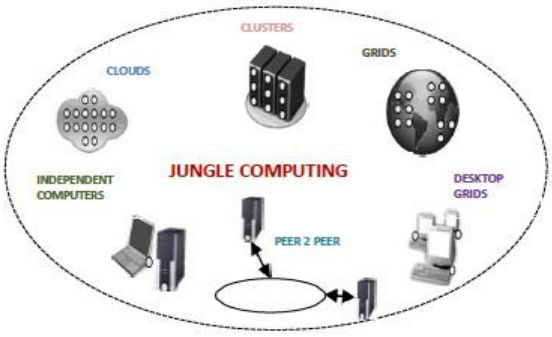

Figure 5: The jungle computing - a diverse collection of computing

The increasing complexity of the high performance computing environment has provided a bewildering range of choices beside traditional supercomputers and clusters. Scientists can now use grid and cloud infrastructures, in a variety of combinations along with traditional supercomputers- all connected via fast networks. And the emergence of many- core technologies such as GPUs, as well as supercomputers on chip within these environments has added to the complexity. Thus high performance computing can now use multiple diverse platforms and systems simultaneously, giving rise to the term "computing jungle". Ibis high-performance distributed programming system is an example of the jungle computing.

5.CONCLUSION

Here we have discussed about modern distributing computing paradigms namely cluster, cloud, grid and jungle computing. . In above all the cloud computing is the recent topic which is under development by so many industrial giant like Google, EMC, Microsoft, Yahoo, Amazon, IBM, etc. since Cloud computing may not be a mainstream technology in the near future, as Grid computing is no longer a concept to be discussed, it is useful to take a glance at the other, newly distributed computing paradigms.

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Perspective of Industrial market using Internet of Things

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ABSTRACT –

The Internet of Things (IoT) is a dynamic global information network consisting of objects that are connected through internet, such as radio frequency identifications, sensors, and actuators, as well as other instruments and smart appliances, which are an integral component of the Internet. A wide range of industrial IoT applications have been developed and deployed in recent years. In an effort to understand the development of IoT in industries, this paper reviews the current research of IoT ,key enabling technologies ,major IoT applications in industries and identifies research trends and challenges. It also provides a systematic exploration of existing IoT products in the marketplace and highlights a number of potentially significant research directions and trends.

KEYWORDS-industrial informatics, information and communication technology, wireless sensor networks, context-awareness, product review, IOT marketplace

I.INTRODUCTION

As an emerging technology, the internet of things is expected to offer promising solutions to transform the operation and role of many existing industrial systems such as transportation system and manufacturing systems. For example, when IOT is used for creating intelligent transportation systems, the transportation authority will be able to track each vechiles existing location, monitor its movement, and predict its future location and possible road traffic. The term IOT was initially proposed to refer to uniquely identifiable interoperable connected objects with radio –frequency identification (RFID) technology. Over the last few years, the Internet of Things (IoT) has gained significant attention from both industry and academia. Since the term was introduced in the late 1990s many solutions have been introduced to the IoT marketplace by different types of organizations, ranging from start-ups, academic institutions, government organizations and large enterprises. Specially, the integration of sensors and actuators, RFID tags, and communication technologies serves as the foundation of IOT and explains how a variety of physical objects and devices around us can be associated to the internet and allow these objects and devices to cooperate and communicate with one another to reach common goals.

II BACKGROUND AND CURRENT RESEARCH OF IOT

IoT can be considered as a global network infrastructure composed of numerous connected devices that rely on sensory, communication, networking and information processing technologies. A number of industrial IOT projects have been conducted in areas such as agriculture, food-processing industry, environmental monitoring, security ability of a system to provide relevant information or services to users using context information where relevance depends on the user's task

III .INTERNET OF THINGS MARKETPLACE

It was estimated that are about 1.5 billion Internet-enabled PCs and over 1 billion Internet-enabled mobile phones used today.

surveillance and others .meanwhile, the number of IOT publications is quickly growing. A foundational technology for IOT is the RFID technology, which allows microchips to transmit the identification information to a reader through wireless communication.

A dynamic global network infrastructure with self-configuring capabilities based on standard and interoperable communication protocols where physical and virtual things have identities, physical attributes, and virtual personalities and use intelligent interfaces, and are seamlessely integrated into the information network.

Context-aware communications and computing are key to enable the intelligent interactions such as those the IoT paradigm envisions. Let us briefly introduce some of the terms in this domain that will help better understand the remaining sections. Contexts are defined as any information that can be used to characterize the situation of an entity. An entity is a person, place, piece of software, software service or object that is considered relevant to the interaction between a user and an application, including the user and application themselves. Context-awareness can be defined as the

interconnection and communication between everyday objects, in the IoT paradigm, enables many applications in a variety of domains. Asin and Gascon have listed 54 application domains under 12 categories, as: smart cities, smart environment, smart water, smart metering, security and emergencies, retail, logistics, industrial control, smart agriculture, smart animal farming, domestic and home automation,

These two categories will be joined by Internet-enabled smart objects in the future. By 2020, there will be about 50 to 100 billion devices connected through Internet, ranging from smart phones, PCs, and ATMs (Automated Teller Machine) to manufacturing equipment in factories and products in shipping containers . the number of things connected to the Internet exceeded the number of people on Earth in 2008. According to CISCO, each individual on earth will have more than six devices connected to the Internet by 2020. Smart city is a concept aimed at providing a set of new generation services and infrastructure with the help of information and

communication technologies (ICT). Smart cities are expected to be composed of many different smart domains. Smart transportation, smart security and smart energy management are some of the most important components for building smart cities . However, in view of market, smart homes, smart grid, smart healthcare, and smart transportation solutions are expected to generate the majority of sales. According to Markets report on Smart Cities Market (2011 - 2016), the global smart city market is expected to cross $1 trillion by 2016, growing at a CAGR of 14.2%. The

[4] CHARITH PERERA1 , (Member, IEEE), CHI HAROLD LIU2 , (Member, IEEE), SRIMAL JAYAWARDENA1 , (Member, IEEE), AND MIN CHEN3 , (Senior Member, IEEE) "a survey on internet of things from industrial market perspective

IV.CONCLUSION

In this article, we reviewed a significant number of IoT solutions in the industry marketplace from context-aware computing perspective. Then, we categorized the IoT solutions in the market into five different segments, as smart wearable, smart home, smart city, smart environment, and smart enterprise. We also reviewed background and current research about IoT .our main goal is to understand the use of IoT in industry market place.

V.REFERENCE

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MARISSA ANN MAYER

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"I always did something I was a little not ready to do. I think that's how you grow. When there is that moment of 'Wow, I'm not really sure I can do this,' and you push through those moments, that is when you have a breakthrough. : Marissa Ann Mayer, Artificial Intelligence."

Mayer was born in Wausau, Wisconsin. She took her bachelor's degree in symbolic systems in 1997 and her master's degree in computer science in 1999, both from Stanford University. For both degrees, she specialized in artificial intelligence (AI), including developing a travel advice software system with a natural language user interface. Upon graduation, Mayer interned at SRI International in Menlo Park, California, and at UBS Financial's research lab based in Zurich, Switzerland. Next, she turned down an offer to teach at Carnegie Mellon University in order to join the then-new Google Company as employee number twenty. Mayer was the company's first female engineer. She started out writing code, as well as supervising small teams tasked with the design and development of Google's search offerings. Mayer holds several patents in artificial intelligence and interface design. Moving quickly into management, Mayer placed her own personal stamp on the company, especially as the person mainly responsible for the elegant, minimalist look of Google's home page, with a single search bar centered on the page surrounded by white space. From there, she went on to oversee the launch and development of many of Google's iconic products, overseeing the development of a host of new AI-based initiatives, including Google Ad Words, Google Search, Google Images, Google Maps, Google Product Search, Google Toolbar, iGoogle, and Gmail, among others.

In 2005, Mayer was named Vice President of Search Products and User Experience at Goggle. In 2011, she spearheaded Google's $125 million acquisition of the survey site, Zagat, to bolster Google Maps. During her years at Google, Mayer also frequently functioned as one of the company's most prominent spokespersons. In 2012, she was appointed President and CEO of

Yahoo! However, as a result of an ultimately unsuccessful $1+ billion acquisition of Tumblr undertaken to buoy the company's sagging fortunes, as well as other controversial cost-saving and performance-enhancing measures, she became unpopular with the company's rank-and-file. Mayer resigned from Yahoo! in June of 2017, in conjunction with the company's sale to Verizon Communications. Mayer, who currently resides in San Francisco, has a net worth estimated to be around $540 million. On July 16, 2012, Mayer was appointed president and CEO of Yahoo!, effective the following day. She was also a member of the company's board of directors. At the time of her appointment, Yahoo's numbers had been falling behind those of Google for over a year and the company had been through several top management changes. To simplify the bureaucratic process and "make the culture the best version of itself", Mayer launched a new online program called PB&J. It collects employee complaints, as well as their votes on problems in the office; if a problem generates at least 50 votes, online management automatically investigates the matter. In February 2013, Mayer oversaw a major personnel policy change at Yahoo! that required all remote-working employees to convert to in-office roles. Having worked from home toward the end of her pregnancy, Mayer returned to work after giving birth to a boy, and built a mother's room next to her office suite—Mayer was consequently criticized for the telecommunicating ban. In April 2013, Mayer changed Yahoo!'s maternity leave policy, lengthening its time allowance and providing a cash bonus to parents. CNN noted this was in line with other Silicon Valley companies, such as Facebook and Google. The New York Times and The New Yorker have criticized Mayer for many of her management decisions in pieces. In November 2013, Mayer instituted a performance review system based on a bell curve ranking of employees, suggesting that managers rank their employees on a bell curve, with those at the low end being fired. Employees complained that some managers were viewing the process as mandatory. In February 2016, a former Yahoo! employee filed a lawsuit against the company claiming that Yahoo's firing practices have violated both California and federal labor laws. In 2014, Mayer was ranked sixth on Fortune's 40 under 40 lists, and was ranked the 16th most-powerful businessperson in the world that year according to the same publication.]In March 2016 Fortune would name Mayer as one of the world's most disappointing leaders. Yahoo! stocks continued to fall by

more than 30% throughout 2015, while 12 key executives left the company. In December 2015, the New York-based hedge fund SpringOwl, a shareholder in Yahoo Inc., released a statement arguing that Mayer be replaced as CEO. Starboard Value, an activist investing firm that owns a stake in Yahoo, likewise wrote a scathing letter regarding Mayer's performance at Yahoo. By January 2016, it was further estimated that Yahoo!'s core business has been worth less than zero dollars for the past few quarters. In February 2016, Mayer confirmed that Yahoo! was considering the possibility of selling its core business. In March 2017, it was reported that Mayer could receive a $23 million termination package upon the sale of Yahoo! to Verizon. Mayer announced her resignation on June 13, 2017. In spite of large losses in advertising revenue at Yahoo! and a 50% reduction in staff during her 5 years as CEO, Mayer was paid a total of $239 million over that time, mainly in stock and stock options. On the day of her resignation, Mayer publicly highlighted many of the company's achievements during her tenure, including: creating $43B in market capitalization, tripling Yahoo stock, growing mobile users to over 650 million, building a $1.5B mobile ad business, and transforming Yahoo's culture. Over Mayer's tenure, the number of monthly visits on Yahoo's home page went down from nearly 10 billion to less than 4.5 while Google's went up from 17 billion to over 56.At the time of Mayer's hiring, Yahoo's numbers had already been falling behind those of Google's for over a year. However, Mayer proved unable to reverse this trend. On 8 November 2017, along with several other present and former corporate CEOs, Mayer testified before the United States Senate Committee on Commerce, science, and Transportation regarding major security breaches at Yahoo during 2013 and 2014.

SELF-DRIVING CARS

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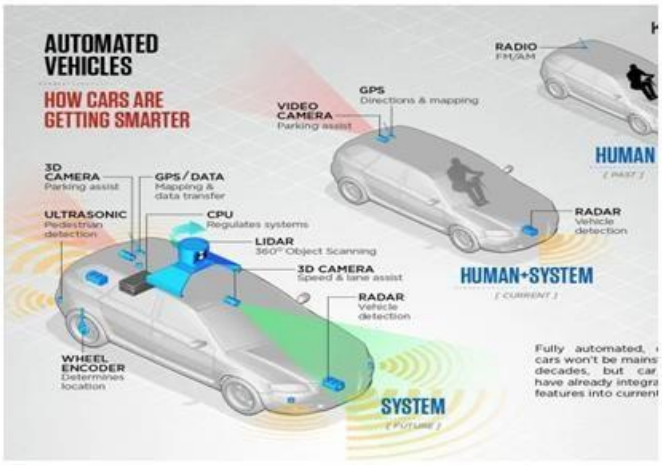
Self-driving car defined as "A computer-controlled car that drives itself". A self-driving car also known as a robotic car is a vehicle that is capable of sensing its environment and moving safely with little or no human input. Self-driving cars combine variety of sensors to perceive their surroundings such as radar, lidar, sonar, GPS, odometry and inertial measurement units. Autonomous or self-driving car technology may be the most significant innovation in transportation since the mass introduction of automobiles. The potential benefits include safer roads, more affordable transportation.



Volvo released 100 self-driving cars on public roads in Gothenburg, Sweden in 2017. Ford also tested its self-driving cars in Europe. Google officially launched its self-driving project as a standalone company under the Alphabet umbrella, called Waymo. Google suggested that this driverless utopia may actually be much further away than many people may realize. Google's car project director Chris Urmson explained that the day when fully autonomous vehicles are widely available, going anywhere that regular cars can, might be as much as 30 years away. There are still serious technical and safety challenges to overcome. In the near term, self-driving cars may be limited to more narrow situations and clearer weather.

ROLE OF ENGINEERS

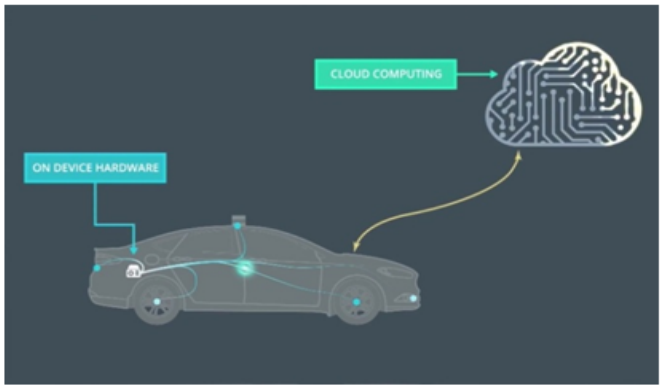
Autonomous vehicle engineers on the job tend to use a variety of languages, depending on their team, their facility with different languages and performance requirements. C++ is a compiled, high-performance language, so most code that actually runs on the vehicle tends to be C++. Not only C++ many engineers spend most of their time prototyping algorithms in Python, java or other languages. Engineers play a vital role in development of robotic cars. Self-driving cars require a broad range of technologies such as special sensors and computer controls to ensure vehicles understand and interact with the environment. Companies will increasingly depend on the expertise of engineers to design and test this cutting-edge technology while ensuring automated vehicles are properly built and safe to drive.

ADVANCEMENTS IN TECHNOLOGY THAT MAKE SELF-DRIVING CARS FEASIBLE

1. Machine learning
   Autonomous vehicles use machine-learning algorithms to create models that detect obstacles and make perceive and act from data. For example, self-driving cars learn to avoid other cars by analysing video frames from onboard camera.

2.Cloud computing

Using the cloud, smart cars can access data and communicate with each other to avoid accidents, download maps, get up-to-day traffic information and determine the best route to get somewhere.



3.Internet of Things

The Internet of Things connects everyday objects through embedded computer devices and the internet. In the case of self-driving cars, it has been described as a shared universal mind that is dynamic and continuously being updated. For example, smart cars register and share real-time traffic alerts.

ADVANTAGES OF AUTONOMOUS CARS

Autonomous cars prevent human errors from happening as the system controls the vehicle. It also uses complicated algorithms that determine the correct stopping distance from one vehicle to another. Thereby, lessening the chances of accidents dramatically. Self-driving cars communicate well with one another. They help in identifying traffic problems early on. It detects road fixing and detours instantly. So, it lessens traffic jams. Robotic cars drop you off at your destination and directly heads to a detected vacant parking spot. These cars also helps senior citizens and disabled personnel who are having difficulty driving. Autonomous vehicles assist them towards safe and accessible transportation.

DISADVANTAGES OF AUTONOMOUS CARS

High-technology vehicles and equipment are expensive. Thus, the cost of having self-driving cars is initially higher. Though it has been successfully programmed, there will still be the possible unexpected glitch that may happen. Autonomous vehicles are also prone to hacking as this vehicle continuously tracks and monitors details of the owner. sometimes sensors failures often happened during drastic weather conditions. The main disadvantage is fewer job opportunities for others, as the artificial intelligence continues to overcome the roles and responsibilities of humans.

Conclusion

Self-driving cars could change transportation dramatically. whether the outcomes are positive or negative will depend on how policy framework guides the introduction of this rapidly evolving technology.

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We know it takes dedication and courage to learn new skills and explore new career opportunities. We are committed to providing you with all the resources and support you need to achieve your learning goals and advance your career.

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SPORTS

Sport's is very important in everyone's life. Some people will have more passion towards sports and participation in sports should always be encouraged. Participation in sport makes us fit, active and healthy. It will develop our social and communication skills. We can explore to new places and people when we go for an competition. It will teach the importance of time in our life because every minute is important in a game. "Healthy mind lives in Healthy body" is so true because for a man to be successful his physical, as well as mental state should be well. Our college "Gayatri Vidya Parishad" helps their students to prove their strength in sports by encouraging them in several activities such as:

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