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WALL FOR ALL

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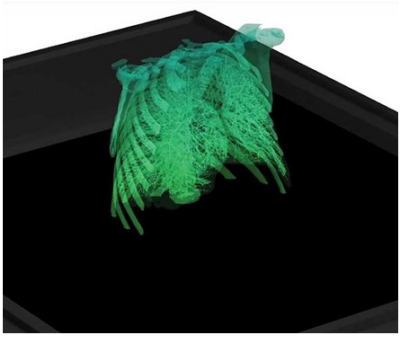
Diagnosis Using 3D Holograms

Mr. Rajesh Kumar Kaushal, Associate Professor,CA ,Chitkara University, Punjab



The doctors visit might be significantly all the more noteworthy in the following couple of years, because of moving 3D video visualizations. The Researchers and designers in the U.K have presented another innovation that will enable specialists and patients to see a pulse, expanded lungs and even an unborn baby in life-measure as a multi-dimensional image that can be pivoted and broadened progressively. There is no need for 3D specs or a virtual reality headset with the dynamic or moving video third-generation holograms from Holoxica. They are made by gathering multiple slices of an internal organ from a normal CT or MRI scanner. The slices are then assembled as a diffractive holographic screen, delivering single shading green pixels or voxels in the mid-air. The entire process basically twists light to the will of the client.

There is a requirement for a doctor, particularly specialists and experts, to envision 3D filters for conclusion, checking, and surgical arranging. It is expected to disclose conditions to patients in an intuitive way.

Current visualization is done with 2D images, which prove difficult to interpret. This new technology provides a solution by presenting the 2D images as a “stack of light,” giving users an easier way to interpret complex data. Augmented and virtual reality are quite popular right now, but they have limitations that make them unsuitable for a true 3D experience. This is something to overcome with hologram 3D technology.

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https://www.photonics.com

Developer’s Delight: Now AI Can Write Code

Ms. Deepika Chaudhary, Associate Professor ,CA ,Chitkara University, Punjab

To make coding easier for developer a new deep learning software coding application is developed which can navigate the complex API’s thus making coding easier. A Computer scientist from Rice university has developed a system called BAYOU and has received the funding for the same from US Department of Defence's Advance Research Project (DARPA) and Google. While the technology is in its beginning state but it represents a major breakthrough in using AI for programming software. The human developer’s efforts can be reduced and the software development can be very much time savvy if BAYOU is used. In another words we can say that BAYOU will act as a search engine for coders, allowing them to enter a few keywords and see code in Java that will help them in order to execute their tasks. BAYOU co-creator SWARAT CHAUDHARY, an associate professor at Department of Computer Science at Rice University announced that from the past 60 years Researchers are trying hard to build AI Systems that can produce code but the attempts failed because of the requirement of information and details of the target program required which makes them inefficient."BAYOU is a considerable improvement," Chaudhuri said in the release. ". The responsibility of developer would be to give BAYOU certain keywords and BAYOU will try to read the programmer’s mind and predict the program they want. BAYOU will train itself by studying human written Java Code from Github and will try to write its own according to a release. This software is based on a method called neural sketch learning which trains a network to recognize high level patterns. "Modern software development is all about APIs," BAYOU architect Vijay Murali, a research scientist at Rice lab, said in the release. "There are hundreds of APIs, and navigating them is very difficult for developers. They spend lots of time at question-answer sites like StackOverflow asking other developers for help." Now developers can ask BAYOU for an immediate response .

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Spectral Clustering Using Graph Theory

Ms. A. Sangeetha, Assistant Professor , Applied Sciences, Chitkara University, Punjab

Spectral clusters refers to a class of techniques which rely on the Eigen structure of a similarity matrix to a partition points into disjoint clusters with points in the same cluster having high similarity and points in different clusters having low similarity. To partition the graphs, this types of clusters uses information based on the Eigen values and Eigen vectors of their adjacency matrices. As they are spectral in nature, they use the spectrum of the adjacency matrix of the data for clustering the points. These clusters play an important role for large data sets with the given sparse similarity graph. These clustering techniques also solve the problems of intertwined spirals as the assumptions are not made for the formation of the cluster. Based on the usage of the number of Eigen Vectors, several algorithms were developed. They are :

- One Eigen vector (recursively uses a single Eigen Vector for partitions)
- Many Eigen Vectors (computes multiway partition)
- Non spectral (Grouping algorithms with multiway spectral algorithms)

The main tool for Spectral clustering are graph Laplacian matrices. In this tool, we assume that G is an undirected, weighted graph with weight matrix W, where wij = wji ≥ 0. We should not assume that they are normalized using Eigen vectors of a matrix. Another tool for spectral clustering is dependent on random walks on the similarity graph. It is a stochastic process which randomly jumps from vertex to vertex. Spectral clustering can be interpreted to find a partition of the graph so that the random walk stays long within the same cluster and seldom jumps between clusters. If the graph is connected and non-bipartite, then the random walk always possesses a unique stationary distribution. Random Walks are connected with Graph Laplacian by Commute Distance(Resistance Distance). It is best suited for clustering process and it is measured as the expected time for a random walk to travel from vertex v_i and v_j and back. The value will decrease if there are many different shortest paths between those vertices and this commute distance also lists all the shortest paths. Points which are connected by a short path in the graph and lie in the same high-density region of the graph are considered closer to each other than other points. Spectral Clusters are used widely in data analysis and have immense support in various applications like machine learning, exploratory data analysis, computer vision, pattern recognition and speech processing.

- Compactness, e.g., k-means, mixture models
- Connectivity, e.g., spectral clustering

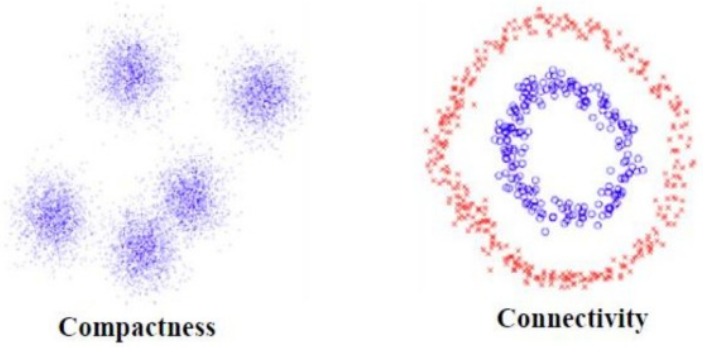

Figure 1

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Remote Sensing-Methods and Applications

Ms. Nishu Bali, Associate Professor, CA, Chitkara University, Punjab

Human beings are provided with special senses(five senses) through which we can always perceive the surroundings. Senses like touch and taste, require the object to come in direct contact with our sense organs. However, we can acquire much information through the senses of sight and hearing which are not dependent on physical contact between the sensing organs and the external objects. In another word, we are performing **Remote Sensing** all the time.

Definition: Remote sensing is defined as the process of detection and monitoring of the physical uniqueness of an area by measuring its reflected and emitted radiation at a distance (typically through aircraft or satellites) from the targeted area. Special cameras are adopted to collect remotely sensed images of the Earth, which help researchers "sense" things about the Earth.

Remote sensing has a wide range of applications in many different fields:

- **Coastline Management**-To monitor the coastline changes, and map coastal characteristics. It can be used for prevention of erosion.
- **Ocean Studies**-In the area of ocean studies which require constant check on ocean circulation used and current system, and study the heights of ocean waves and to monitor the temperature variations of the ocean water. This data can be used to avoid human loss in the times of natural calamities.
- **Traffic Management**-Some Remote sensing devices(Lidar) have found its use in traffic management and checking of the violation of traffic rules.
- **Forestry**-Forest management has also benefitted a lot from the remote sensing techniques. Checking the overall vegetation cover of forest, monitoring the drastic effects of fire on the vegetation, general canopy count or height calculations are few of the many applications.
- **Disaster Management**- Disaster Management also uses the technique of remote sensing for tracking hurricanes, earthquakes, erosion, and flooding. Data of remote sensing devices can be used before and after a hazardous event.
- **Natural Resource Management**- Remote sensing also plays an important role in Natural resource management like land use management, and chart wildlife habitats.

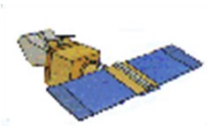
Types of Remote Sensors

Remote sensors can be either **passive or active**.

- Passive sensors respond to external stimuli. They record natural energy that is reflected or emitted from the Earth's surface. The most common source of radiation detected by passive sensors is reflected sunlight.
- Active sensors use inner stimuli to gather data about Earth. For example, a laser-beam remote sensing system projects a laser onto the surface of Earth and measures the time that it takes for the laser to reflect back to its sensor.

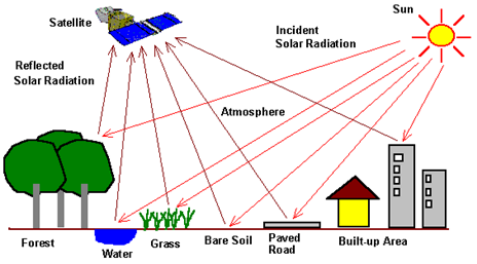
Active Sensors	Passive Sensors
LiDAR	Aerial Photography
Radar	FLIR
InSAR	Geodetic Survey
PSInSAR	Hyperspectral Imaging
SAR	Long-Wave Infrared
SRT	Multispectral Imaging
	Near Infrared Surveys
	Oblique Aerial & Ground Visible Band & Thermographic Imaging
	Radiometrics
	SWIR
	Stereo Satellite Imagery

Types of Remote Sensing Techniques

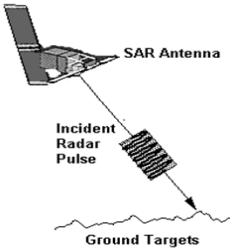


- **Satellite Remote Sensing**-In this type of remote sensing, the sensors are mounted on satellites which are constantly monitoring the earth surface. They are the "eyes in the sky" constantly observing the earth as they go round in predictable orbits. the sensors have to look through the atmosphere layers separating the sensors from Earth's surface being observed. The atmospheric particulates cause wavelength dependent absorption and scattering of radiation. These effects degrade the quality of images

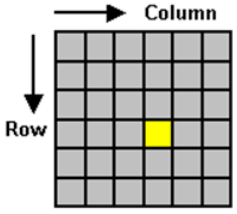
- **Optical and Infra red Remote Sensing**- In Optical Remote Sensing, optical sensors work on solar radiations which are reflected or scattered from the earth, forming images similar to the photographs taken by a camera high up in space. The wavelengths used mainly vary from the visible and near infrared (VNIR) to the short-wave infrared (SWIR). Different materials depending on their reflective indices reflect the sunlight and produce different colors which can be detected and used for studying the nature of the object under study.The infrared sensors measure the thermal infrared radiation emitted from the earth, from which the land or sea surface temperature can be derived.



- **Microwave Remote Sensing-**Some satellites are mounted on by microwave sensors which may be active or passive in nature. Pulses of microwave radiation re sued by active sensors to illuminate the areas to be imaged. Images of the earth surface are formed by measuring the microwave energy scattered by the ground or sea back to the sensors. These satellites carry their own "flashlight" emitting microwaves to illuminate their targets day and night. The high penetration power of microwave radiations provides an additional advantage of this type of remote sensing as images can be acquired even when there are clouds covering the earth surface.



Remote Sensing Images



Remote sensing images are normally in the form of digital images. In order to extract useful information from the images, image processing techniques may be employed to enhance the image to help visual interpretation, and to correct or restore the image if the image has been subjected to geometric distortion, blurring or degradation by other factors. There are many image analysis techniques available and the methods used depend on the requirements of the specific problem concerned. In many cases, image segmentation and classification algorithms are used to demarcate different areas in an image into thematic classes. The resulting product is a thematic map of the study area. This thematic map can be combined with other databases of the test area for further analysis and utilization

Thus, remote sensing has a very promising future in easing the technique of studying distant objects or features of Earth's surface.

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ANT COLONY BASED IP TRACEBACK SCHEME

Mr. Vipul Mandhar, Assistant Professor, CA, Chitkara University, Punjab

Introduction

In the public eye, the Internet is growing swiftly because of its noteworthy features, availability, and lesser cost. It has given a boost to good fortune in every track we can think of and Internet has its own warmth and harm. Many unauthorized movements are devoted on the internet. DDoS attack is one of them. The originator IP address that is attached to the packet can be used by the attacker to hood itself from the penetrating from this type of attacks. IP spoofing is used to form hosts difficult to resist against an amplification attack. For such reasons, developing architecture to strike the actual source of attacks is the main challenge in DDoS. IP traceback is an impressive approach to finding the actual path of network packets from where it is actually provoked. In this paper, we proposed a scheme which will help to find the three shortest path from any particular source to destination if there are so many paths, this will help to provide better result as soon as possible because according to this one have to go through only these shortest path instead of all the path between them .Main aim is to find the root of the packet as soon as possible to tackle the attack. In existing traceback schemes there are many drawback or confines which may or may not be overcome but according to proposed method we will get three shortest path that will help to find the root quickly.

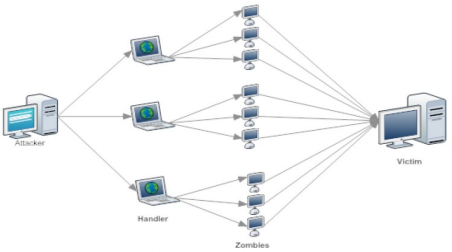


Fig. 1. Basic structure of DDoS attacks

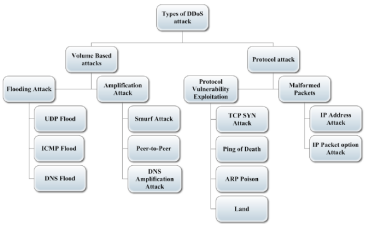


Fig. 2 *Types of DDoS attacks*

Background Details: Denial of Service (DoS) attacks is determined security matter to now-a-days on Internet. In denial of service attacks, an malicious user fling to close down and mess up a targeted owner computer by the continuous sending of great amount of malicious attack packets on the targeted machine, which we call the legitimate user. There usually stand more than millenary enemy (attackers with bot machines) in DDoS attacks. Across denial of service and distributed denial of services attacks, we look at IP traceback. As shown in the fig. 1.

Attacker sends the malicious packets to the victim through the handler who uses zombies machines for the attack. There are so many different types of DDoS attacks occurs as shown in fig .2.

DDoS attack occurs on both windows and linux operating system as shown in the fig. 3. The First quarter and second quarter (Q1 Q2) the hike in the place of SYN-DDoS is majestically falling to the reality that while the 2nd quarter of 2016, 70.2% of all the crack attacks comes from the Linux botnets. It is first time when such an disproportion among the life of Linux- and Windows-based DDoS bots. In the past, the difference never crosses 10 percentage points. Linux bots are one of the most belonging tools for using SYN-DDoS. In the quarter third and fourth (Q3 Q4), The growing regard of IOT devices used for DDoS attacks pose that in 2017 the stasis will bend further approaching Linux, Since the most devices that are connected to the internet are based on this operating system.

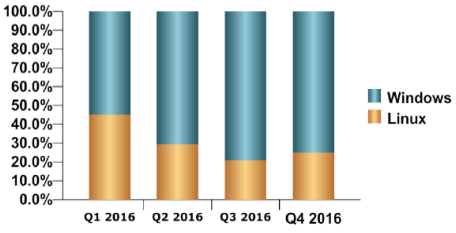


Fig. 3. DDoS attacks frequency

Locate the origin of a packet is generally known as IP traceback. It's problematic since IP address can be victimize or spoofed. IP Traceback used only for testimony of the sources of the horrify packets during and after the malicious attack. Finding the path through which malicious packet will come is mainly IP Traceback . Mainly used to footprint the DDoS, where the malicious packet (attacker). In regular, IP traceback is not finite only to DoS and DDoS attacks. As shown in Fig .4. after the attack there are nine different paths for victim to reach actual attacker but from these nine only one path is used for the attack that is highlighted i.e. the actual attack path.

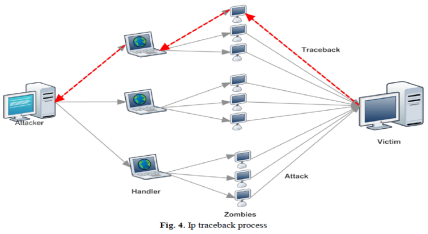


Fig. 4. Ip traceback process

In this experimental setup as shown in fig .5 we find the shortest path from victim to the attacker with the use of star coloring algorithm on the autonomous system, but here we take only 1 particular path to reach any particular router, but if there is so many different paths to reach the destination then which path will be chosen as the shortest path.

Proposed framework

Here we take 5 different paths from 1 source to particular destination; initially it will choose the shortest path with the help of MACO or by time interval or the number of events that occurs when number of packets. Multiple ant colony optimizations is a process that is used to find the shortest path among the all possible path from source to destination. In this path the routers R5 R4 R3 router so routers of this path is assign the lightest color i.e. yellow, the second shortest path is assigned with the color darker then the first priority as orange color, third shortest path will be assigned with red color and darker than other previous two shortest path as shown in fig.6. If none of these three paths are active then any path will be chosen to reach the destination.

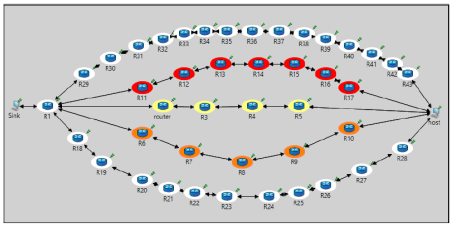


Fig.6. Proposed simulation setup

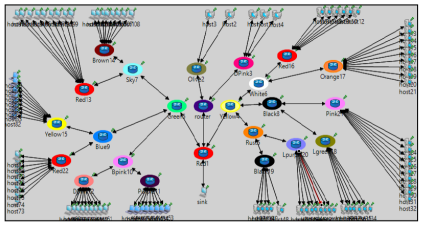


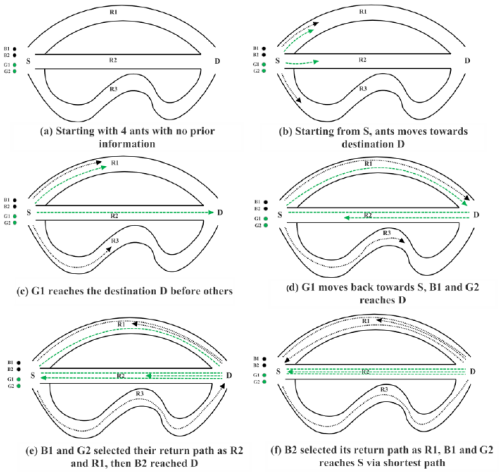
Fig. 5 Existing simulation setup

Shortest path detection We apply MACO multiple ant colony optimization to find the shortest path from source to the destination. Here, a multiple ant colony optimization *(MACO)* technique for the reduce dullness and strengthen attentiveness. In MACO, the each colony of ants deposits a distinct sort of the pheromone that is described by a particular color. An sample to clarify the MACO scheme for system routing gives results as: Let assume that the total number of ants are 4: Ag1, Ag2, Ab1, Ab2, where Ag1 and Ag2 are green color ants and Ab1, and Ab2 are black color ants. There are total 3 different paths from source S to reach the destination D i.e. *R1, R2 and R3*, so *R2 > R1 > R3*. At the beginning all the 4 ants are at S with no prior information about the route and they choose among from the {*R1 R2 R3*} to reach the destination.

1. At *S*, Ag1, Ag2, Ab1 and Ab2 *are un-aware* about the position of *D* as shown in fig 6 (a). It follows that, they choose their path against {*R1, R2, R3*} as shown in fig 6 (b). Suppose that Ag1 and Ag2 select the *R2* and *R1*respectively while Ab1 and Ab2 choose *R1* and *R3* as a result. As they move onward the selected paths and spread a certain volume of pheromone. While Ag1 and Ag2 each spread one unit of green color pheromone on *R2* and *R1* as a result, *Ab1and* Ab*2* each spread 1 unit of black color pheromone on *R1* and *R3* respectively.

2. As shown in fig 6 (c), since *R2* < *R1* < R3, Ag1 arrive *D* ahead Ag2, Ab1 and Ab2. To come back from *D* to *S. Ag1* find that *R2* = 1 and *R1* = *R3*=0 (where volume of the green pheromone on *R2*, but the trace of green pheromone on *the path R1 and R3*) shown in fig .6(d)

3. After all R2 > R1 along with R1> R2, when Ag2 and Ab1 reaches the D, As Ag2 and Ab1 move along *R1* and *R2*, So R2 increases to 2 and R1=1as shown in 6 (e)



(a) Starting with 4 ants with no prior information
(b) Starting from S, ants moves towards destination D
(c) G1 reaches the destination D before others
(d) G1 moves back towards S, B1 and G2 reaches D
(e) B1 and G2 selected their return path as R2 and R1, then B2 reached D
(f) B2 selected its return path as R1, B1 and G2 reaches S via shortest path

Fig. 6. Multiple ant colony optimization process

4. So both the ants Ag2 and Ab1 select their return path as R2 and R1 as shown in 6 (e).

5. Finally, when Ab2 reaches the D at that time R1 = 2 and R3 = 1, so R1 > R3 there for Ab2 choose *R1* as return path to reach S as shown in 6 (f).

6. When all ants return to S, *R2* has huge unit of , where *R1* has the huge unit of . therefore the ants belongs from the green colony will choose the path *R2* and the ants that is of the black colony will chooses *R1*.

By, using this concept we find the shortest paths from different paths and give priority to the shortest path for the traceback process. We find the best three shortest paths by applying the concept again and again on different paths whose starting point and the destination points are same

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Vipul Mandhar and Virender Ranga, "Hybrid Traceback Scheme for DDoS Attacks", 5th International Conference on Advanced Computing, Networking, and Informatics [ICACNI -2017], Springer, accepted, June 1-3, 2017

E-Solution To Deal With Sewage Gases

Mr. Kartik Sharma, Mr. Rachit Sharma, Mr. Rishabh Sehgal, MCA-II Semester, Chitkara University, Punjab

ABSTRACT

Sewage is a type of waste water that is produced by community of people, heavy industries , households and agricultural fields. With the increased usage of fertilizers and pesticides in the modern agriculture, expansion of food processing industries, population explosion, urbanization and growth of several other industrial processes the volume of sewage produced is maximizing and becoming a challenging task day by day. It is also a major carrier of various types of chemicals and toxic substances that are hazardous to our environment, physical and mental health of human beings, animals as well as plants. Therefore, it becomes mandatory to have a proper and a functionally active sewage treatment system. There are various gases that are produced in sewer for example: Hydrogen Sulphide, Ammonia etc. The growth of all these gases may lead to the lack of oxygen, explosion, when combined with a origin of ignition. Hence, in order to avoid the precarious effects generated from these sewer gases the waste water goes under various treatment processes. Even for the continuous sewage treatment or disposal facilities the maintenance and examination of the system is also required. In this article , we will be talking about the Gas detecting device "MQ" used in the sewage treatment plants in order to find out the increased level of harmful gases if any. elimination of all these gas hazards is though virtually impossible, so labors and contractors must depend on genuine gas detection tools to keep themselves safe. We will also discuss about various remedial measures to overcome the problem of the accumulation of these dangerous gases and their treatment as-well.

INTRODUCTION

A waste water management system helps in sewage treatment or disposal facilities with the use of sewer pipes[1]. Therefore the inspection and maintenance of the system should be actively carried out because the sewer pipes are vulnerable to damage from biochemical reactions, aging etc. The exposure of sewage can cause serious public health and environmental problems through infection and contamination. The matter carried by the sewer leads to the collection of the material at the bottom of the sewer pipes where the insufficient supply of oxygen leads to a biochemical reaction which generates hydrogen sulphide, methane and numerous other volatile substances[2]. The growing consensus shows the contribution of sewage system and the formation of it's gases such as methane and carbon dioxide in the green house effect.

Sewage gas is a mixture of both toxic and non toxic gases that includes hydrogen sulphide, ammonia, methane, carbonmonoxide and many more. These gases are produced by the house hold as well as industrial wastes. Some health problems caused by the sewer gases are like breathing issues, eye irritation, nausea etc. Apart from these health problems it can even lead to serious damage due to the sudden explosion caused by these[3]. Further, these eruptive gases can lead to fire.

How Gases Are produced In Sewer

Hydrogen Sulphide(H_2S) is turned out when sulfate radical(SO_4) is declined to H_2S and water(H_2O). This reaction takes place only when there is no oxygen present in the environment.

Hydrogen Sulphide cannot produce in fresh waste water for three or four days but it takes weeks to produce.

Habitats Favoring Hydrogen Sulphide Produce

If mud has been collected at the bottom of the pipe, hydrogen sulphide will be created.

If there is a problem in the sewer with flow so that the waste water cannot move, the oxygen proportion gets to low and that helps in the production of H_2S in the sewage.

Harmful Gases Produced In Sewer

Methane (CH_4) is the largest sole element of sewer gas, which includes an variety of toxic and non-toxic gases, which are formed during the decay of household and industrial waste. Some types of gases which are produced in sewer are ammonia (NH_3),hydrogen sulfide(H_2S), sulfur dioxide(SO_2), carbon dioxide(CO_2), nitrous oxides (N_2O). Improperly disposed mineral may also provide to sewer gases.

Hydrogen Sulphide (H_2S)	It is a colorless gas which is mostly referred to sewer gas.It is a highly poisonous and corrosive gas.
Ammonia (NH_3)	Also known as Azane which is a colorless gas with a pungent smell and is hazardous too. It is harmful because inhalation of this gas can cause coughing, nose and throat irritation.
Methane (CH_4)	It is also a colorless, odorless and flammable gas.Methane is the main constituent of natural gas and the abundance of this gas on earth makes it an attractive fuel.
Carbon Monoxide (CO)	It is also a colorless, odorless and tasteless gas that is slightly less dense than air. Breathing of Carbon Monoxide can cause dizziness, head ache, nausea, also high level of this gas can be fatal due to increased risk of heart failure.

Table 1:Different Gases Present in Sewage

Side Effects Of Sewer Gas Inhalation

Inhalation of these gases can cause headache, nausea, eye irritation, nose irritation, throat irritation, fatigue, loss of appetite, poor memory etc.

Long term exposure to moderate and high levels of these gases can also be linked to increased risk of heart diseases, anemia, asphyxiation.Long term but low level symptoms can lead to fatigue, loss of appetite, poor memory.

0.00047 ppm	The point at which human (50%) can detect the existence of an reek.
10–20 ppm	The margin for eye irritation.
20 ppm	The acceptable ceiling concentration established by Occupational Safety and Health Administration.
50 ppm	The maximum concentration for an 8-hour shift, with a maximum period of 10 minutes.
50–100 ppm	May lead to eye damage.
100–150 ppm	Within few minutes of inhalation the sense of smell disappears.
320–530 ppm	May lead to pulmonary edema which can lead to death.
320–530 ppm	May lead to pulmonary edema which can lead to death.
530–1000 ppm	Causes rapid and loss of breathing.
1000 ppm	Proportion over can cause instant loss of breathing.

Proportions Of H_2S , Which Can Cause Several Problems

(PPM (part(s) per million) : - One gram in 1000 ml is 1000 ppm and one thousandth of a gram in 1000 ml is one ppm.)

Hydrogen Sulphide Gas: Why You Should Be Concerned:

Since Hydrogen Sulphide (H_2S) occurs naturally in the environment, in the body, there are enzymes present to detoxify it. At some point, average would be 300-350 pp(Part(s) per million), oxidative enzymes turn into deluge.

Numerous safety gases detectors, which are used by utility, sewage labors, are set to notify at as low as 5 to 10 ppm and to go high at 15 ppm.

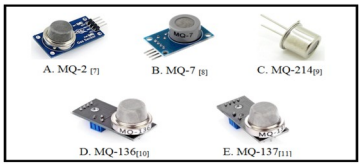
Incidents Caused By Hydrogen sulfide (H_2S) during 2011-2016:

- **Four people killed in pharmaceutical plant due to a gas leak near Tarapur (2011)[4]**

According to police reports Four people choked to death after they inhaled a toxic gas in a pharmaceutical plant and at least five were injured."According to preliminary investigations, a pipe burst caused leakage of hydrogen sulphide gas in the plant premises,".

- **3 injured, one killed in gas leakage at Mathura refinery (2013)[5]**

According to police reports a person was killed and three others were taken ill following leakage of gas in Mathura Refinery during a maintenance operation.The workers, hired by a privately owned company that has taken the contract for the cleaning of IndianOil Corporation's refinery, became senseless due to the leakage of H_2S (Hydrogen Sulphide).



- **Death caused due to gas leak on INS Indian Naval Ship (2016)[6]**

A seaman and a noncombatant contractor were killed and two others injured by a toxic gas leak during maintenance work during the first refit of the Indian Naval Ship Vikram Aditya in June '16.

SOLUTION

We have proposed a "BREATHE ROBO" which consists of 2 IR sensors, MQ-2 gas sensor which is used to sense various harmful toxic as well as non toxic gases.

If the sensor senses the gas is above the harmful level then a buzzer will beep.

Various MQ sensors:

- The MQ-2 can detect NaturalGas concentrations anywhere from 200 to 10000ppm.
- The MQ-7 can detect CO-gas concentrations anywhere from 20 to 2000ppm.
- The MQ214 can detect Methane gas concentrations anywhere from 3000ppm-20000ppm.
- The MQ136 can detect Hydrogen Sulphide gas concentrations anywhere from 1-100ppm.
- The MQ137 can detect Ammonia gas concentrations anywhere from 5-500ppm.

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Green Computing

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Computers have become a necessary evil nowadays. By using the computer we save a lot of time and efforts but the use of the computers also increase the power consumption and also generates a large amount of heat . Thus, computers are causing a heavy pollution to the environment. In this era, 70 percent of energy is consumed by our computers which are not properly used and that consumed energy is main reason of CO_2 emission. All these factors put an alarming situation and force every environment loving individual to think in the direction of saving our environment for living a healthy life.

Green Computing is an application of environmental science that offers economically feasible solutions that can conserve natural environment and its resources. The term Green computing came into existence with the launch of Energy Star program in 1992 by U.S environmental protection agency. Energy star is a program of label awarded to computers and other electronic devices. It is basically used to minimize the use of the energy and maximize the efficiency of the product/device. The labelling program is intended to promote and recognize the energy efficiency in monitors, climate control equipment and other technologies. This technique basically increases the adoption of "sleep mode" among consumer's electronics.

Definition: Green computing is designing, manufacturing, using and disposing of computers and its resources efficiently with minimal or no impact on environment.

It is an emerging concept towards reducing the hazardous material and save our environment from the harmful impacts of the computer, CPU, servers and other electronic devices. A big advantage of Green computing is towards electricity saving and lowering the amount of heat generated by the computers.

Most of us are updating our systems, throwing outdated systems and peripherals which cause the creation of hazardless toxic wastes that call the need of green computing. Also, critical point has reached in Computing power consumption. Data centres have run out of usable power and cooling due to high densities. These factors show a dire need for a green computing environment.

Advantages: Green Computing gives lots of advantages. Green computing reduces energy usage through green computing techniques that controls the carbon dioxide. It uses less energy for electronic products during their production, use and dispose.

This technique saves energy and money too. Green computing even includes environ policy to encourage recycling and lowering energy use by individuals and business. It is a powerful approach to utilize resources such as computers, office space, heat, light, electrical power in an environmental friendly way. Green computing reduce the risk existing in the laptops such as chemical known to cause cancer, nerve damage and immune reactions in humans.

Disadvantages: "Every coin has two faces"
Along with many advantages, there are some disadvantages of Green computing. The major disadvantage of green computing is that it is very costly. It is having high start up and maintenance cost. Some computers that are green may be considered underpowered. Due to less consumer and manufacturer awareness, Green computing is still not taken care of during design process

Conclusion:

Thus green computing aims to reduce the unwanted and harmful effects of computers on the environment by reducing air, water and soil pollution. Green computing is a attitude that asks how we can satisfy the growing demand for network computing without putting much pressure on the environment. Though the challenges are many but with the ever increasing research in the fields of science and technology, we can make our environment congenial for healthy growth.

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Internet Of Things

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The Internet of Things (IOT) may be a hot topic in the industry but it's not a new concept. The IOT concept was established by a member of the Radio Frequency Identification (RFID) development community in 1999. Today, it is growing very fast because of increasing use of mobile devices, embedded and ubiquitous communication, cloud computing and data analytics. The IOT refers to a type of network to connect anything with the Internet based on specific protocols to conduct information exchange and communications in order to attain smart recognition, positioning, tracing, monitoring etc. IOT is a network of physical objects. The Internet involves network devices of all types and shapes like vehicles, smart phones, home appliances, toys, cameras, medical instruments and many more based on specific protocols. IOT describes a system where items in the physical world and sensors within or attached to these items are connected to the Internet via wired or wireless Internet connections.

The Internet of things have main highlighting features that can be defined by three C's.

- Communication
- Control and Automation
- Cost Saving
- **Communication**-It signifies that IOT intercommunicates information to people and systems. IOT enabled objects will share information about their condition and surrounding environment with people, software systems and other machines. Everything is having a digital identity and connectivity, which means everyone can identify, track and communicate with objects. For example, GPS enabled assets can communicate their current location and movement. In transportation industry, a business can deliver real- time tracking and condition of parcels and pallets.
- **Control and Automation**-In IOT, two or more sensors connect to each other and to systems that can present information from the sensor's data feeds. These sensors provide new information to company's system and to people. Many businesses can benefit from IOT in automating certain basic tasks without depending on cloud based application and services due to diverse Inter-Machine communication and intelligence drawn from the devices and network.
- **Cost Saving feature**- Many companies will adopt IOT to save money. Most industrial companies lose money when equipment fails. With new sensor information available, IOT can help a company to save money by minimizing equipment failure and allowing the business to perform premeditated maintenance. New smart meters in homes and businesses can also provide data that helps people to know the energy consumption and opportunities for cost savings.

Disadvantages of IOT- As we all know, if there are advantages of something then there will be some challenges it will have to face. So IOT also have some issues that challenge it.

- **Security Issues**- One of issues with IOT is security. IOT creates an ecosystem of constantly connected devices communicating over networks. The system offers little control despite any security measures. This leaves users exposed to various kind of attackers.
- **Privacy Issues**-Another major issue with IOT is privacy violation. The sophistication of IoT provides substantial personal data in extreme detail without the user's active participation.
- **Compliance with Standards**- IOT must comply with regulations. With so much inherent complexity, the issue of compliance seems incredibly challenging when many consider standard software compliance a battle.

Conclusion: Internet of Things is a new revolution of the internet and it is a key research topic for researcher in embedded, computer science and information technology area.

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Cloud Computing

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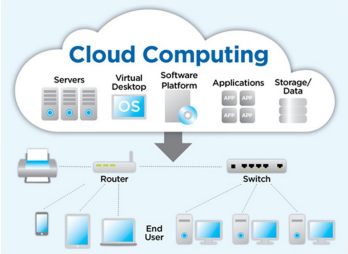
Introduction

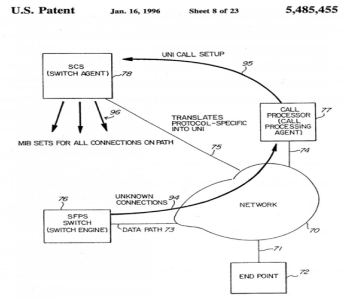


The term Cloud Computing has developed along a number of lines since 1960s. The idea was to make a technology through which we can access our data whole over the world without carrying our Laptops. Positively the human mind succeeded, and developed a technology called Cloud Computing.
Today Cloud Computing is a Hot Topic. Did you ever wondered why it's called Cloud, it has nothing to do with Storms, Weathers or even meteorology. Rewind to the early nineties let's back up: Scientists and other computer engineers needed something to refer to the "Network", as a group of computers and storage devices, so they settled on cloud. In Layman's language they needed a way to point something that was not their problem or someone's else problem.

History

- Early in 1960's, there was initial concept of time-sharing ,became popularized, and was mostly associated with large vendors such as IBM.
- In early 1970's time sharing problem was solved, Full time-sharing solutions were available.
- Late in 1990's some companies which was offering P2P data circuits , started giving VPN (Virtual Private Network) services with a quality of services offered.

Milestones



- Introduction of Salesforce.com in 1999, which pioneered the concept of delivering endeavor apps via simple webabsite.
- Next development was Amazon Web Services in 2002, which gave a combo of cloud services like storage, computation and even more.
- Later in 2006 Cloud computing got hype when Amazon launched its Elastic Compute Cloud (EC2) as a commercial web service.
- Widely Used EC2 cloud computing infrastructure.
- In 2009 Another big milestone when Web2.0 hits its stride and Google started to offer browser based enterprise applications, like Google Apps.

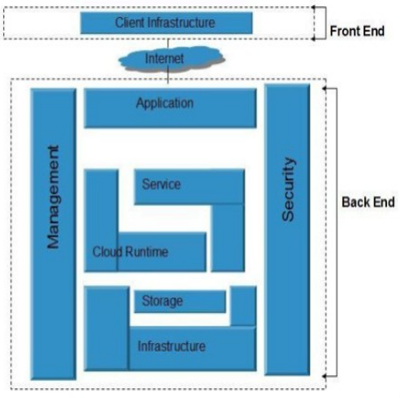
Concept:

Cloud Computing based on several services and models to ensure the feasible and accessible to end user.

- Service Model
- Deployment Model

Service Model

- IAAS (Infrastructure as a Service)
- PAAS (Platform as a Service)
- SAAS (Software as a Service)



Deployment Model

- Public Cloud
- Private Cloud
- Community Cloud
- Hybrid Cloud

Architecture

Cloud Computing Architecture is divided into two main parts:

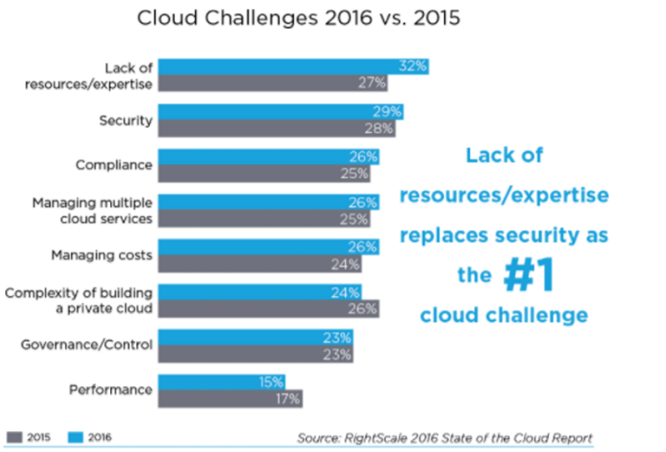
- Front End
- Back End

Cloud Computing (Contd.)

As coin has two faces, in the same way there are some benefits as well as challenges of Cloud Computing.

Benefits

- Reduced Cost
- Flexibility
- Increased Storage
- Increased Collaboration
- Security
- Capital expenditure free

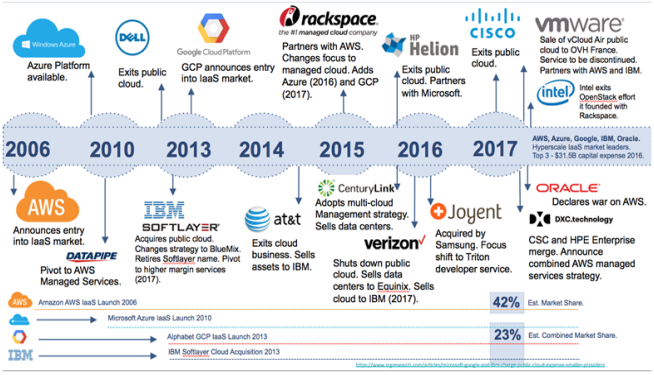


Challenges

- Data Recovery
- Reliability
- Migration
- Privacy issues
- Cost Management
- Performance

As day by day we are growing in IT sectors and Companies are also moving towards Cloud to expand their business and ease in flexibility, this also leads to hype in job requirements for Cloud Handling. Cloud Technologies are mostly virtualization environments.

Aspirants seeking to make good in the Cloud need to be skillful in networking and virtualization and gain hands-on exposure with live deployments.



According to the statistics provided by the Market Research Media, the worldwide market for Cloud Computing is likely to grow at a CAGR of 30% to reach US$ 270 billion through the year 2020. Considering the cutting-edge innovations and new industry-specific applications, Cloud Computing is fast emerging as an essential component of an enterprise's IT framework.

Organizations, both big and small have deployed the cloud technology in some suitable capacity. Enterprises need expert IT professionals to work around 'the cloud'. The Cloud Computing industry requires professionals with adept training and knowledge in both technical and managerial fields. The demand for IT professionals continues to rise at an exponential rate as more and more enterprises adopt Cloud Computing.

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EDITORIAL SECTION

At Chitkara University, the endeavor has always been to hone the skills of the learners. Keeping in line with this tradition, the Department of Computer Applications, Chitkara University, Punjab has come up with an online magazine titled Wall For All. This e-magazine is proposed to provide a platform to the budding learners where they can share their knowledge and also the general information pertaining to the computing field. This e-magazine also provides an opportunity to the faculty members to share their ideas and views on topics of general interest. Wall For All is available for free download in PDF format from departmental website ca.chitkara.edu.in.

We hope to get due feedback from our readers which can help us in improving our further issues.

"HAPPY READING"

Dr. Jaiteg Singh
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