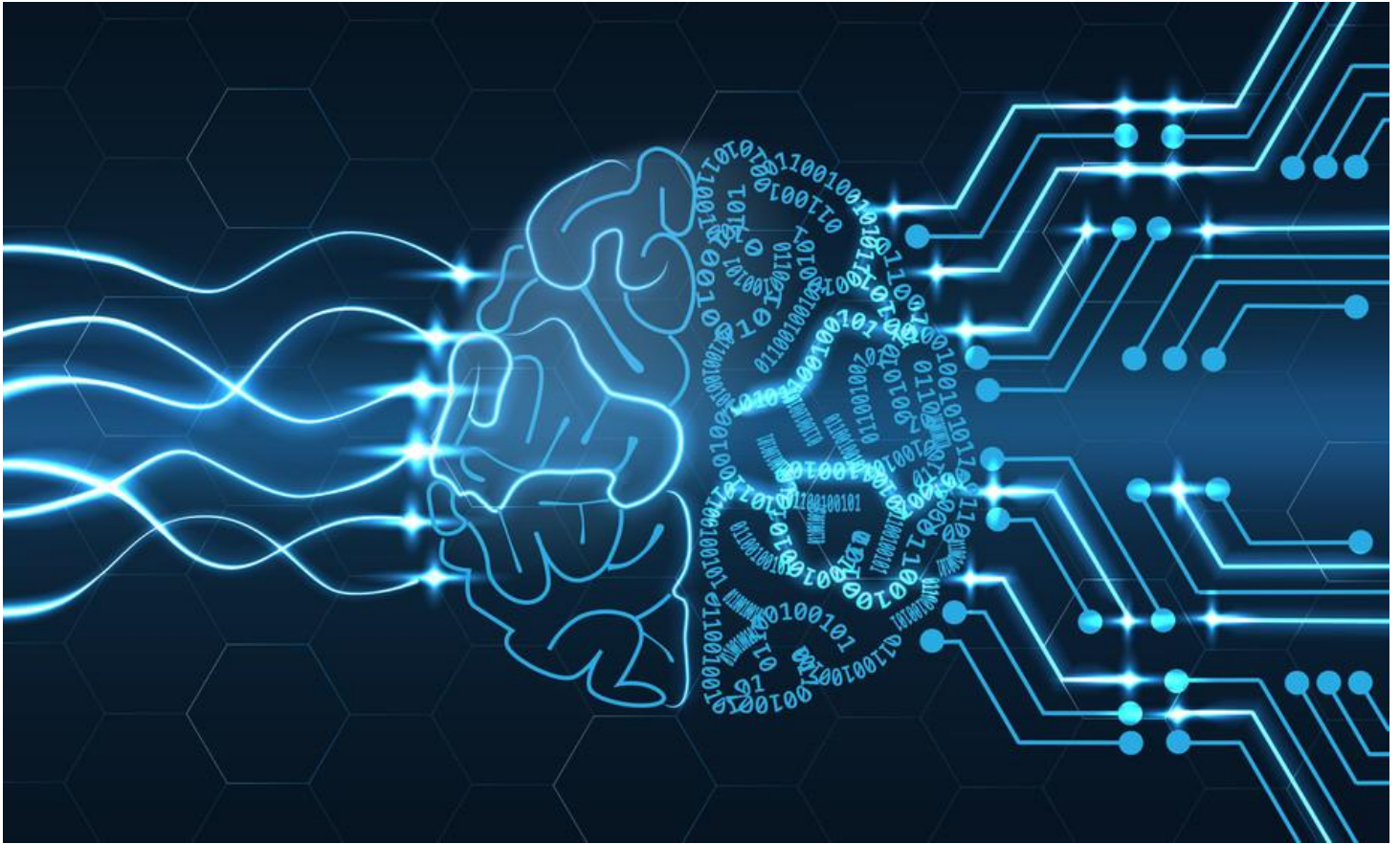


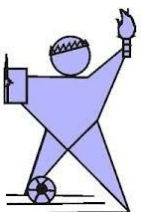
7th Edition

'Boot' For Computer

Best of Outstanding Technology



**Department of Computer Science & Engineering Institute of
Engineering and Science
IPS Academy, Indore
2018-19**



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HOD Message



Today we find that information technology has become overwhelmingly pervasive, while its parent, computing science, has become correspondingly hard to find. While many CS educational institutions have shifted focus from core CS. This is the single most important attribute of the education offered here. Our department has remained true to the vision on which it was founded.

There are several ways to present the canonical core of computer science. Over the years we have developed a distinct style and method that bridges the theory - practice divide while remaining grounded in the core. Technology changes rapidly, especially in the field of computing, whereas the science, if it changes at all, does so much more gradually. Our understanding is that persons who are clear and thorough about the fundamentals can adapt to rapid changes in technology relatively easily. We want the education imparted to our students to be the basis of a life time of learning.

Our Department has produced hundreds of professionals and has established a name for itself in the country and abroad. They have consistently excelled in the highly competitive industrial environment, Best Employer/ awards in top-ranking companies. I attribute this success to the winning combination of a dedicated faculty that works hard at imparting quality education, a well-planned syllabus and last but not the least, our students.

Learning is a continuous process and does not end with the acquisition of a degree, especially because steady and rapid advances in computing technologies shorten the life of tools and techniques prevalent today. Therefore we do not aim to make our students walking manuals of any language or package. Instead, they are given a strong foundation in computer science and problem-solving techniques and are made adaptable to changes.

We believe that this approach to teaching-learning, coupled with practical experience gained during Industrial Training in reputed organizations, equips our students to handle the challenges posed by the software industry.

Prof. Namrata Tapaswi
Professor & Head CSE Department
Institute of Engineering & Science, IPS Academy

Editorial

'BOOT' For Computer

Session 2018-19

E-Magazine Faculty Coordinator

Dr. Pratik Gite
Mr. Anil Panwar
Mr. Sumit Jain

E Magazine Student Editorial Board

- [1] Aarushi Jain
- [2] Aditi Singh Lodhi
- [3] Utkarsh Shrotriya
- [4] Prachi Lodha

Programme Education Objectives

The educational objectives of the Computer Science & Engineering programs are as follows:

1. To prepare students for successful careers in software industry that meet the needs of Indian and multinational companies.
2. To develop the skills among students to analyze real world problem & implement with computer engineering solution and in multidisciplinary projects.
3. To provide students with solid foundation in mathematical, scientific and engineering fundamentals to solve engineering problems and required also to pursue higher studies.
4. To develop the ability to work with the core competence of computer science & engineering i.e. software engineering, hardware structure & networking concepts so that one can find feasible solution to real world problems
5. To inculcate in student's professional and ethical attitude, effective communication skills, team work skills, multidisciplinary approach, and an ability to relate engineering issues to broader social context.
6. To motivate students perseverance for lifelong learning and to introduce them to professional ethics and codes of professional practice

Programme Outcomes

An engineering program defines a set of specific program outcomes that relate to its educational objectives, including the items a-k listed below. We regularly review the courses in our curriculum to make sure that all these items are covered, and try to measure whether our students are successfully attaining the following goals:

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

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

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

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

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

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

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

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

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

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

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

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

CSE Department Information

Name and address of the department:

Department of Computer Science & Engineering
Institute of Engineering and Science, IPS Academy
Knowledge Village
Rajendra Nagar, A.B.Road, Indore (M.P) PIN-452012

Head of the Department

Dr. Namrata Tapaswi
HOD, Computer Science & Engineering
Phone: 0731- 4014853
e-mail: hod.compsec@ipsacademy.org

History of the department:

The Department of Computer Science & Engineering was established in the year 1999 offering Bachelor of Engineering (BE) with intake 60, it was increased to 120 in year 2012 and again intake was increased to 180 in year 2014. The programme is intended to educate students on the applications of scientific knowledge for practical purposes involving activities like modeling, analysis, design and other associated fields of core courses in Computer Science & Engineering education. It intends to equip graduates with profound theoretical knowledge and rich hands on experience.

Vision & Mission of the Department

Vision

Attaining global recognition in computer science and engineering education, research and training to meet the growing needs of the industry and society

Mission

Provide quality undergraduate and postgraduate education, in both the theoretical and applied foundations of computer science, and train students to effectively apply this education to solve real-world problems, thus amplifying their potential for lifelong high-quality careers.

Department Faculty Details

 <p>Dr. Namrata Tapaswi HOD & Professor</p>	 <p>Mr. Jayesh Gangarade Associate Professor</p>	 <p>Mr. Arvind Upadhyay Associate Professor</p>	 <p>Mr. Neeraj Shrivastava Associate Professor</p>
 <p>Mr. Sunil Nimawat Assistant Professor</p>	 <p>Mr. Sourabh Jain Assistant Professor</p>	 <p>Mr. Kamal Borana Assistant Professor</p>	 <p>Mr. Sumit Devray Assistant Professor</p>
 <p>Mr. Deepak Shukla Assistant Professor</p>	 <p>Ms. Nisha Bhalse Assistant Professor</p>	 <p>Ms. Shweta Gangrade Assistant Professor</p>	 <p>Mr. Vijay Choudhary Assistant Professor</p>



Mr. Yagyapal Yadav
Assistant Professor



Mr. Neeraj Mehta
Assistant Professor



Mr. Ved Kumar Gupta
Assistant Professor



Ms. Anjali Verma
Assistant Professor



Mr. Anil Panwar
Assistant Professor



Ms. Barkha Sahu
Assistant Professor



Ms. Vaishali Gupta
Assistant Professor



Mr. Sudhir Kumar
Patidar
Assistant Professor



Mr. Pratik Jain
Assistant Professor



Mr. Ajay Jaiswal
Assistant Professor



Mr. Pankaj Pateriya
Assistant Professor



Mr. Prateek Nahar
Assistant Professor



Ms. Nitu Mathuriya
Assistant Professor



Mr. Ankur Ratmele
Assistant Professor



Ms. Priyanka
Vijayvargiya
Assistant Professor



Mr. Sunny Bagga
Assistant Professor



Ms. Purnima Pandey
Assistant Professor



Mr. Dharmendra
Gupta
Assistant Professor



Mr. Dharmendra
Choukse
Senior Programmer



Mr. Antriksha
Somani
Assistant Professor



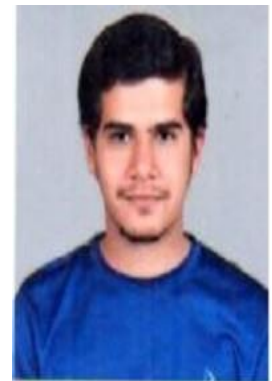
Mr. Mayur Rathi
Assistant Professor



Mr. Sumit Jain
Assistant Professor



Mr. Vishal Chabra
Assistant Professor



Mr. Anshul Oza
Assistant Professor



Ms. Archana Aapte
System Analyst



Dr. Pratik Gite
Assistant Professor

Departmental Events

Six faculty development programs were organized in which, five day program was on Android Application in the month of July 2018, 30 days FDP on 'Foundation Program in ICT for Education FDP 101x' in the month of September-October 2018, Forty five days FDP on Pedagogy for online Blended Teaching Learning Process 201x in the month of November-December and a six days Refresher course on 'IOT' in the month of December.

Two day Seminar on 'Python' in the month of October 2018, one day seminar on Advance Java in the month of October 2018 and another one day seminar on C/C++ in the month of February 2019.

30 days workshop was organized on 'Woman Entrepreneurship Development Programme' in the month of August 2018. One day workshop is organized in Koha and Library Automation in the month of October 2018, one day program on 'Advance Java' in the month of October 2018. One day Program on 'Moodle' in the month of March 2019, one day program on 'Applications of Adriuno' by Mr. Amarpreet Singh in the month of January 2018, one day program on 'scilab' and one day program on 'Python' in the month of May 2019.

Two days International Conference was organized on Recent Advances in Interdisciplinary Trends in Engineering and Applications in IPS Academy, Institute of Engineering and Science on 14-16 Feb 2019. Expert lecture given by Dr. Oscar Castillio and Dr. Maode Ma.

One Industrial visit tour was organized for 6 days by Xoriant, Pune in the month of October 2018.

16 Training programs were organized on C and CPP, Java, NetBeans, Linux, Advanced Java, Hybrid Technology, IOT.

Other Events were organized in which one Engineer's day program , 7 days competition on Business Planned Development in the month of October- November 2018, Major and Minor project competition cum exhibition UDAAN-2018 was also organized on month of April 2019.

Membership of Professional Societies

Department of Computer science & engineering is having the membership of Computer society of India (CSI). Programs were organized under the banner of CSI in the Department.

Placements

Total numbers of placements offered in year 2017-18 are 108. Name of the company for placement are Infosys, Amdocs, Hidden brains Infotech, TCS, AVL Pvt. Ltd, Verdantis, Benfie Consultancy Pvt. Ltd., Best Peers, Byju's, Hidden brains Infotech, HSBC Software Technologies, Cash Karo, CIS, ClearTrail, Collabera, Process Master Technologies Pvt. Ltd, Global Shiksha Pvt. Ltd, I-Lead, InnoEye, Masu Tech, Jaro Education, Moneyites Global, NIIT Technologies, Relaince Jio, Yardi Software, Tudip, Zensar, Yash Technologies, World Pay, Newgen Software, Wipro Limited, Xorient Solutions Pvt. Ltd. etc.

Sports Activities

Students had received winner & runner up awards in different sports activities (IPSA Level) like Cricket Competition(Girls), Basketball(Girls), Volleyball(Girls), Shotput(Girls), Table Tennis(Boys & Girls), Chess(Boys & Girls), LAN Game(Boys & Girls).

Faculty Members Achievements

In the department, Papers published in Journals were twenty in numbers. Journals are International journal of computer science & engineering, International Journal of Computational Vision and Robotics (Scopus), International Journal of Scientific Research in Computer Science Applications and Management Studies, International Journal of Advanced Research and Innovation Ideas in Education, Asian Journal of Computer Science and Technology, International journal of computer science & engineering , International Journal of Information and Computing Science, International journal of scientific research in computer science applications & management studies.

Paper published in conference in National/International Level are fifty two in number on different topics of MANET, Image Processing, Data Mining, Opinion Mining, Cloud Computing, Big Data Analytics, Machine Learning etc.

Three books were published by Dr. Pratik Gite on topics of Mobile Ad-hoc Network, Network and Web Security, Research Trends in MANET under VEDA publication.

In the department, many faculty members attended workshop/seminar on different topics names are **Awareness of ICT/MOOCs, Moodle, Scilab, Examination Reform, PYTHON** and FDP/SDP on different topics names are **Android Application Development, AI and Machine Learning, Faculty Development Program for Student Induction (FDP-SI)", Faculty Development Program on machine intelligence and applications (TEQIP-III), FDP on Pedagogy for online blended teaching learning process FDP201x, Faculty Development Program on Agile and Dev Ops, Microsoft Office, IOT.**

In the department various faculty members received **SRIJAN-2019 Faculty Facilitation Award** names are Ms. Shweta Gangrade (SEPM), Mr. Saurabh Jain (SEPM & CGMM), Mr. Pankaj Pateria (OOAD and IoT), Mr. Vijay Choudhary (IoT), Mr. Sumit Devray(DC and DBMS), Mr. Deepak Shukla (DC), Mr. Sudhir Kumar Patidar (OS), Ms. Priyanka Vijayvargiya (OS), Mr. Ved Kumar Gupta (DBMS), Mr. Neeraj Mehta (DBMS), Mr. Sunil Nimawat (DBMS), Mr. Ajay Jaiswal (CGMM).

Various faculties members successfully completed NPTEL online certification. Their names are Mr. Sunil Nimawat (Introduction to AutoMata Languages and Computation) with 86%, Mr.

Neeraj Shrivastava (Introduction to AutoMata Languages and Computation) with 85%, Mr. Arvind Upadhyay (Programming in C++) with 58%, Mr. Mayur Rathi (Programming in C++) with 71%, Mr. Sumit Jain (Programming in C++) with 71%, Mr. Prateek Nahar (Machine Learning) with 60%, Mr. Jayesh Gangrade (Machine Learning), Ms. Shweta Gangrade (Machine Learning) with 66%, Ms. Nisha Bhalse with 55%, Mr. Neeraj Mehta (Python) with 70%, Mr. Ved Kumar Gupta (Python) with 78%.

Ten Expert Lectures were delivered by Faculties in Seminars and Workshop on Financial aspects of SSI unit including salient features of a project, Entrepreneurship & Patent, MS Word and Excel, Arduino, Importance of IOT.

Student Achievements

Eleven different Academic Awards: winner & runner up awards in events like “UDAAN 2019” Minor and Major Project Competition Cum Exhibition, Paper Presentation Competition, Business Plan development and Competition, Science Exhibition

Papers published in Journals were nine in numbers. Journal names are: International Journals of Computer Science and Engineering, International Journals of Scientific Research & Reviews, International Journals of Scientific Research in Computer Science Applications & Management Studies, IJCSE, International Journal of Computer Science and Technology, International Journal of Information and Computing Science.

Six Papers were presented in International Conference on “Recent Advances in Interdisciplinary Trends in Engineering and Applications” organized by IPS Academy, Institute of Engineering Science, Indore on 14-16 Feb 2019. Presented paper topics were Efficient VANET Routing Protocols through Coding, A PSO Algorithm Based Web Page Retrieval System, Survey on Static and Dynamic Load Balancing Algorithms in Cloud Computing, A Improved Dynamic E-Commerce Recommendation System, Instagram Sentiment Analysis : Opinion Mining, Load Balancing of VM in Cloud Computing using Cloudsim, Machine Translation for English-Punjabi Language.

Special award is received by Rajat Kulkarni on the event of “31 National Singing Competition Sur Sangam, Jaipur”.

Twenty Six Workshops/Seminars were attended on topic like C & CPP, Cloud Computing, Advance Java, Linux, Blender, Entrepreneurship Awareness Camp, Advance Java, IOT, Spoken Tutorial Projects, IIT Bombay, Machine Learning, Quanta and Aptitude, Reasoning.

In culture event students got winner & runner up awards in events like Technical Treasure Hunt, LAN Gimming, Quiz Competition, Model Exhibition, Technical Jewelry, Rangoli, Mahandi, Regional Fountain, Photography, Face Painting, Anand Mela, Treasure Hunt, Dance Group (Classical and Western).

1. Load Balancing in Cloud Computing

Abstract

Cloud computing is the most reliable, proficient and useful in today's world of technology. Cloud computing is a technique which consists of various software and web-enabled services. The resource scheduling and resource allocation in cloud computing is the vast area of research now a days. Thus the efficient algorithm for cloud resource scheduling and allocation will result in more elastic and efficient cloud computing services. Implementation of cloud uses various steps from maintenance to implementation and so on. In this paper, we had conducted a survey on different load balancing algorithms and categorized them on the basis of their dynamicity and found the challenges faced by those algorithms. Then, we compared these algorithms with an approach of Hidden Markov Model technique and by this technique; we will try to clarify the load balancing scenario of the cloud service during resource scheduling. The Hidden Markov Model in cloud resource scheduling can help to predict the next work load coming on the server, according to which the system will allocate the resources to a particular work. This will help in better CPU utilization as well as faster execution environment in cloud computing.

Introduction

Cloud is a web based service. When we talk about cloud computing, it enables access to shared system resources and high level services on demand on the internet. Many of the researchers and industries showed their huge interest in the field of cloud computing. Cloud computing has made a powerful footstep in the computer science industry. Cloud computing is the vast concept. Cloud computing provides a means of Accessing the applications as utilities over the internet. The whole internet can be considered as the cloud of many resources. Cloud computing provides on demand services which is the main profitable area as it is device and location independent. Cloud computing also possesses a broad network access throughout the world i.e. one can access anything anywhere on any device which supports cloud. Cloud is a huge data hub or storage and can be of mainly three types i.e. public, private or hybrid. Google, Microsoft, amazon and many big industries uses cloud. Cloud services are popular due to the efficient computing and storage technologies Cloud servers consists of a lot of resources as they always include various services To scale their ability and maintain their performance. In many cases one server needs to Use the services and resources of another server and for each resource they need to pay to that server. On the other hand, many resources are not used properly, thus these unutilized resources yet need to be paid. The main aim is to investigate different techniques to manage these cloud resources so that the resource scheduling and allocation of those resources be efficient. Thus main work is resource scheduling and resource allocation. The cloud mainly consists of three deployment models. They are IaaS, PaaS and SaaS. These three models deploy the cloud as a complete infrastructure. Infrastructure as a Service (IaaS) tends to provides users an access to cloud computing resources such as servers, storage, networking and so on. Platform as a Service

(PaaS) provides an arena on which they can develop and manage applications. Software as a Service (SaaS) provides the access to those applications and software that were developed and managed in PaaS. The cloud can be of many types. The main types of cloud are Private, which is operated by a single organization, either managed by the same organization or a third party, second, public cloud, which is an open cloud and third is a Hybrid cloud which is a mixture of both public and private cloud. There also exists a Commercial cloud but that's not the point of view at the time.

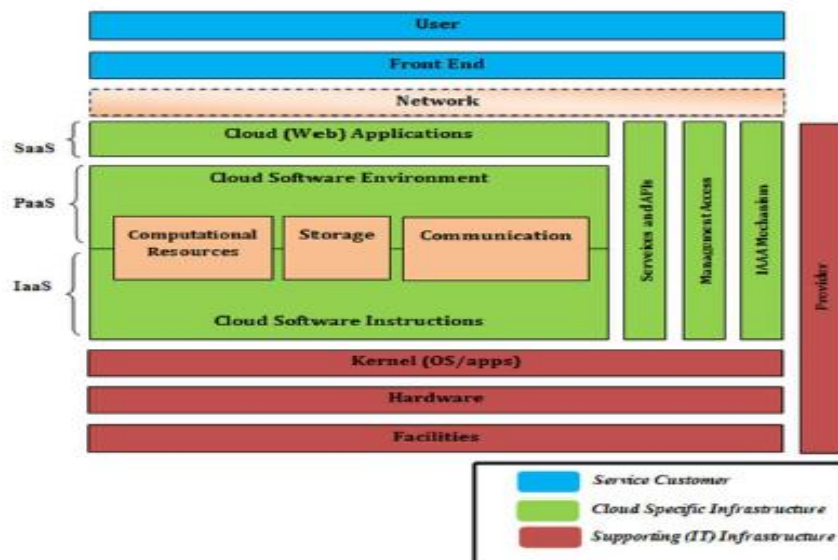


Figure: 1 Cloud Computing Architecture

What is Load Balancing?

Load Balancing plays a very vital role in the field of cloud computing. The workload of the cloud must be balanced so as to provide QoS (Quality of Service) to the users and even vendors. Thus, the main are of focus is to find an effective strategy to distribute the workload across different processors. Here, in cloud computing, the load balancing can help in reducing the execution time, waiting time, throughput, response time and many other areas of cloud computing. Thus, it should ensure that every processor in the system should do equal work and every work should be finished at the same time. There are various algorithms defined to balance the workload in cloud computing. The load balancing algorithm works in a very easy way. It sees the heavy loaded processors which contains a lot of tasks/jobs and then transfers these tasks on the lightly loaded processors so as to make the execution faster and reduce the waiting time. The main motive of load balancing algorithm is to make each and every processor equally busy and ensure that each processor finish the work approximately at the same time. A distributed

system contains a lot of processors working together and independently whether linked to each other or not. Each processor has an amount of work to be done on the given time according to its working capacity. The work here should be distributed across all the processors based on their processing capacity and processing speed so that the execution and waiting time should be minimized. Thus, the load balancing algorithm should be that effective to produce the best results as possible. Here, resource scheduling and resource allocation is the main area of management in load balancing in cloud computing. Resource scheduling is process which build a schedule that specifies when and where and on which resource a job should be executed including the time of execution of that task. This is needed because every server has limited resources to get the required work done and a number of tasks for that resources so these tasks need to be scheduled. Whereas, when we talk about resource allocation, to allocate the resources to the tasks, there is a need of scheduling which schedule the resources as well as need to schedule the tasks coming to those resources. There is a need of checking the availability of the processors so that the coming tasks can be allocated to the best resources in an optimal way. The load should also be balanced among the same type of resources. Building a scalable cloud resource management system which meets all these requirements is very challenging. There are various resource scheduling algorithms defined in different ways to find the best and optimal load balancing in cloud computing. The main motive of these algorithms should fulfill all these requirements including the cost, time and utilization of the CPU.

Conclusion

Cloud computing is a very fast emerging area as it provides a number of services anytime, anywhere which is attracting a number of users day by day. Thus, it needs a much better resource management projects to provide reliable and fast execution environment for cloud computing. In this article, we surveyed for the better load balancing approach for cloud computing and found HMM that can help balancing the workload in far better way as compared to other algorithms. As known, Hidden Markov Model is a predictive technique and can predict the work load in a far better way as compared to other algorithms so that the resources can be scheduled and allocated more precisely. In this survey of Load Balancing algorithms, HMM was also proved to be better than Neural Networks, Genetic algorithm and SVM (Support Vector Machine). Thus, a number of research is possible regarding using HMM in the field of resource scheduling in cloud computing.

2. Dark Web Social Network

Abstract

This exposition is an early ethnographic investigation of the Dark Web Social Network (DWSN), a long-range informal communication website just available to Web programs furnished with The Onion Router. The focal case of this article is that the DWSN is an examination in power/opportunity, an endeavor to at the same time follow, send, and defeat the verifiable conditions in which it gets itself: the conventional requirements and affordances of long range interpersonal communication as they have been created over the previous decade by Facebook and Twitter, and the ideological limitations and affordances of open impression of the dim web, which hold that the dull web is helpful for both forbidden exercises and opportunity from state persecution. I follow the DWSN's explore different avenues regarding power/opportunity through three practices: mysterious/informal communication, the restricting of tyke erotica, and the beneficial parts of techno-elitism. I at that point utilize these practices to determine specific types of intensity/opportunity on the DWSN.

Introduction

This exposition is an early ethnographic investigation of the Dark Web Social Network (DWSN), a long-range informal communication webpage (SNS) just available to Web programs furnished with The Onion Router (Tor). Though most research on long range interpersonal communication centers around the standard, corporate SNSs, for example, Twitter and Facebook, this paper is a commitment to grant on options in contrast to such standard locales (e.g. Lovink and Rasch, 2013). My focal case is that any suitable long range interpersonal communication elective will be a try different things with both opportunity and power. At the end of the day, similarly as standard SNSs are set apart by both control (as reconnaissance, the algorithmic direction of client exercises, and structural imperatives) and opportunity (as client drove the creation, political association, furthermore, new types of online sociality), so too will an option. To be an option, the particular blend of intensity/opportunity in any internet based life elective must be not quite the same as standard SNSs. This specificity should be dissected experimentally and after that conceptualized. I contend that the DWSN is an investigation in power/opportunity, an endeavor to follow, send, and defeat the authentic conditions in which it gets itself. These conditions incorporate the conventional requirements and affordances of

interpersonal interaction. Besides, since the DWSN exists on the dull web, these conditions additionally incorporate the ideological limitations also, affordances of an open impression of the dim web. The DWSN arranges both of these recorded strings.

Conclusion

The individuals and heads of the DWSN are doing this basic work—following, conveying, and neutralizing both the verifiable furthest reaches of standard person to person communication and the authentic points of confinement of the media belief system of the dull web. To try different things with both verifiable conditions, the DWSN is figuring out the usefulness what's more, social practices of locales, for example, Facebook and Twitter and porting these capacities onto the dim web. The DWSN is building a darkish internet area that is effective in two senses. First is the “be the media” experience of mainstream social media websites: the now-traditional narrative approximately social media is that the consumer is on top of things and that anybody are “producers” making our very own tradition through digital creativity (e.G. Bruns, 2008). However, the DWSN is likewise bringing software- and culturally developed social media restrictions to the darkish internet.

Pranav Sonare (0808CS181127)

3. LSB based image Steganography

Abstract

Data hiding is actually an approach in which one can transmit the information to defined user by not allowing any other person to have access on it. Nowadays, the all fact is available across the web been easily accessible, which gives us a good cause for advancement in security mechanism. “Steganography”, A technology which uses images to conceal the information inside images. To unleash a secure transmission Steganography make latent the actuality of information into images. Through this paper the standard lsb based totally on image Steganography utilizing secret key has been achieved. The fact has-been formed latent in LSB's of RGB actual color Image. To avoid unintended access from illegal user the unrevealed information resides within LSB of image where a confidential key protects secret information. In LSB Technique, at a peculiar position of LSB of a Image the untold information is stacked. In this proposed technique, a message bits stream has-been reduced from each character has seven bits in ASCII to each character has four bits stream as result of bit move the potential of image is increases as much as 30% and it can improves noise to signal ratio up to 27% from previous method.

Introduction

Steganography, a process through which data is enclosed within data. It's a procedure to encipher information which is used alongside with cryptography as an overprotected method to defend data. This term Steganography, gets its root from the Greek ancient text which means “covered or secret writing”. Steganography is the method of concealing data into some other data to hide that information from the unauthorized person. In Greek History, around 440 BC an ancient example of Steganography is: Herodotus a Greek history scholar of the 5th century discloses some illustrations of its use in his effort designated “The Histories of Herodotus”. An example indicate that ruler of Miletus, named Histaeus, tattooed a confidential message in bald headed of his bond slave. He was sent to Aristagorus after he grew his hair back, then again his head was shaved and the note that commanded a riot against the Persians was released. In this example, the confidential message was sent by slave and no one could judge that slave had transmitted a message. In the result, the message was conveyed to the recipient without any suspicion. The King of Abdulaziz City of Technology & Science in UAE ,a project was

originated to interpret into English some primitive Arabic document on confidential Writing which are consider been written 1200 years ago. Few of these documents were found in Turkey and Germany. The intention of these forms is to bring out new approaches of hiding technique, in which we tell about the reduction of seven bit binary stream of single character into four bits binary stream and improvement of the competence of an image. Also about PSNR that is PSNR which is results of Histogram, Square Error and Capability of an image.

LSB Steganography Technique

One among the many primeval stego-systems is Least Significant Bit Substitution technology, make believe because of how the information of message is encapsulated within a cover image. The terminology Least Significant Bit (LSB) in computer science mention to the minimal (rightmost) bit of a binary sequel. The framework of binary is such that each integer value might be a 1 or a 0, often considered as on and off respectively. Reading from right, the value (if on) states a 1. The value to its left (if on) signifies 2, and so on, where the values double each time. Now examine these an arrangement of 8-bit binary sequel: 10110011 Adding every value equivalent to 1 yield a resultant output of 179. The rightmost value (denoted in highlighted text) is the LSB of this sequel. This value necessarily concludes whether the overall addition is odd or even. The overall sum will be odd if the LSB is 1, and if 0, it will be an even number. However, altered the LSB value from a 0 to a 1 not going to have a tremendous impact on the complete result; it will only usually altered by +1 at most. If we considered each 8-bit binary sequence for pointed the colour of a pixel for an image, it should be plain to visible that altered the LSB value from a 0 to a 1 will only change the colour by +1 - a change that is unbelievable to be observed with the bare eyes In fact, the LSBs of each value of a pixel could probably be remodelled, and the difference would still not be visible. This highlights a big amount of overabundance in the image data, and means that we can effectively alternate the LSBs of the image data, with each bit of the message data until the whole message has been encapsulated. This is what is meant by Least Significant Bit Substitution.

Conclusion

It has been discovered that the result of proposed technique is more coherent and stronger than previous technique and algorithm. Hence no contrast found in original image and stego image after encapsulating the message bits in an image and improved capacity of cover image. Message

bit stream is now been reduced (7 bits each character to 4 bits each character) i.e. character 'a' having ASCII value 97 in binary representation 1100001 is reduced into 4 bits 11001, so the potential of an image for data embedding has been much improved. It is very tough task for steganalyst to get and understand hidden message into the stego image. Without knowing secret key, it is impossible to retrieve information from the stego image. Proposed data embedding technique, each pixel of image contain message, some pixel value has been changed and some pixel value as same as cover image by using proposed technique. In statistical analysis, there is no difference found in histogram of original image and stego image because of very few pixels value has been changed. In proposed technique Peak Signal to Noise Ratio (PSNR) has been found higher than previous techniques and algorithms.

Snehal Awasthi (0808cs181165)

4. Security in Cloud Computing Environment

Abstract

In this paper we give a survey of third party based model for security in cloud computing environment. Cloud Computing is becoming the heart or the central theme for all sort of computing. Cloud is a remote place, at which user can upload data, can download data, can do processing of data, etc. Cloud provides space, computing power, platform and many more services on rent. This paper presents a brief introduction to the concept of clouds & its services. This paper also presents the issues related to the security of data in cloud environment. A few modern attribute based encryption models for the data security have been discussed.

Introduction

Cloud computing is the favorite topic to many researchers. It will become more popular in coming years as the reach of internet is increasing day by day. Cloud computing has three basic models, which are Platform as a Service (PaaS), Infrastructure or Hardware as a Service (IaaS/HaaS), Software as a Service (SaaS). The Main advantages of cloud computing are: low cost, improved performance, infinite storage space etc. Load balancing in cloud computing systems is really a challenge now. A distributed solution is required. As it is not always practically feasible or cost efficient to maintain one or more idle services just as to fulfill the required demands. All jobs can't be assigned to appropriate servers and clients individually for efficient load balancing as cloud is a very complex structure and components are present throughout a wide spread area. The cloud computing holds the promise of providing computing as the fifth utility after the other four utilities water, gas, electricity, and telephone. The major benefits of cloud computing include reduced costs and capital expenditures, the increased operational efficiencies, high scalability, flexibility and so on. There are many service-oriented cloud computing models have been proposed. It includes Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS).

Literature Review

Sahni and ater introduced the public-key cryptography attribute based encryption (ABE) for cryptographically enforced access control. In ABE both the user secret key and the

ciphertext are associated with a set of attributes. A user is able to decrypt the ciphertext if and only if at least a threshold number of attributes overlap between the ciphertext and user secret key. Different from traditional publickey cryptography such as Identity-Based Encryption[3], ABE is intended for one-to-many encryption in which ciphertexts are not necessarily encrypted to one particular user. In Sahai and Waters ABE scheme, the threshold semantics are not very expressive to be used for designing more general access control system. To enable more general access control, Goyal et al. [4,5] proposed a key-policy attribute-based encryption (KP-ABE) scheme – a variant of ABE. The idea of a KP-ABE scheme is as follows: the ciphertext is associated with a set of attributes and each user secret key is embedded with an access structure which can be any monotonic tree access structure. A user is able to decrypt a ciphertext if and only if the ciphertext attributes satisfy the access structure embedded in her secret key. In the same work, Goyal et al. introduced the concept of another variant of ABE ciphertext policy attribute-based encryption (CP-ABE). CP-ABE works in the reverse way of KP-ABE in the sense that in CP-ABE the ciphertext is associated with an access structure and each user secret key is embedded with a set of attributes. Formally, KP-ABE and CP-ABE can be defined as follows.

Key-Policy Attribute-Based Encryption A KP-ABE scheme consists of the following four algorithms. **Setup** This algorithm takes as input a security parameter κ and returns the public key pk as well as a system master secret key sk . pk is used by message senders for encryption. sk is used to generate user secret keys and is known only to the authority. **Encryption** This algorithm takes a message m , the public key pk , and a set of attributes A as input. It outputs the cipher text c . **Key Generation** This algorithm takes as input an access structure Γ and the master secret key sk . It outputs a secret key sk_u that enables the user to decrypt a message encrypted under a set of attributes if and only if A matches Γ . **Decryption** It takes as input the user's secret key sk_u for access structure Γ and the ciphertext, which was encrypted under the attribute set A . This algorithm outputs the message m if and only if the attribute set A satisfies the user's access structure Γ .

Ciphertext-Policy Attribute-Based Encryption A CP-ABE scheme also consists of four algorithms: **Setup** This algorithm takes as input a security parameter κ and returns the public key pk as well as a system master secret key sk . pk is used by message senders for encryption. sk is used to generate user secret keys and is known only to the authority. **Encrypt** This algorithm takes as input the public parameter pk , a message m , and an access structure Γ . It outputs the ciphertext c . **KeyGen** This algorithm takes as input a set of attributes A associated with the user and the master secret key sk . It outputs a secret key sk_u that enables the user to decrypt a message encrypted under an access structure Γ if and only if A matches Γ . **Decrypt** This algorithm takes as input

the ciphertext and a secret key for an attributes set . It returns the message if and only if satisfies the access structure associated with the ciphertext .In ABE, including KP-ABE and CP-ABE, the authority runs the algorithm Setup and Key Generation to generate system , , and user secret keys. Any user knowing the system public key is able to encrypt data by calling the algorithm Encryption. Only authorized users (i.e., users with intended access structures) are able to decrypt by calling the algorithm Decryption. In this dissertation, we just consider the case of one-writer-and-multiple-reader in un trusted storage for brevity. The only writer is the data owner, who also acts as the authority and is in charge of key generation. This means that the data owner takes the role of both the authority and the encryptor .In the following part of this dissertation, we will alternative call this party by “authority” or “data owner”. The decrypt or will be called as “data consumer”, or just “user” for brevity.

Conclusion

Cloud is mostly used for storing data & processing the data. Many organizations have critical data, which is required to be kept confidential from the outside world. So the security of data is a burning issue in cloud environment. In this paper, the security issues have been discussed. A good number of existing cloud security model have also been reviewed.

Ronak Jaiswal (0808CS181139)

5. Wireless Body Area Network

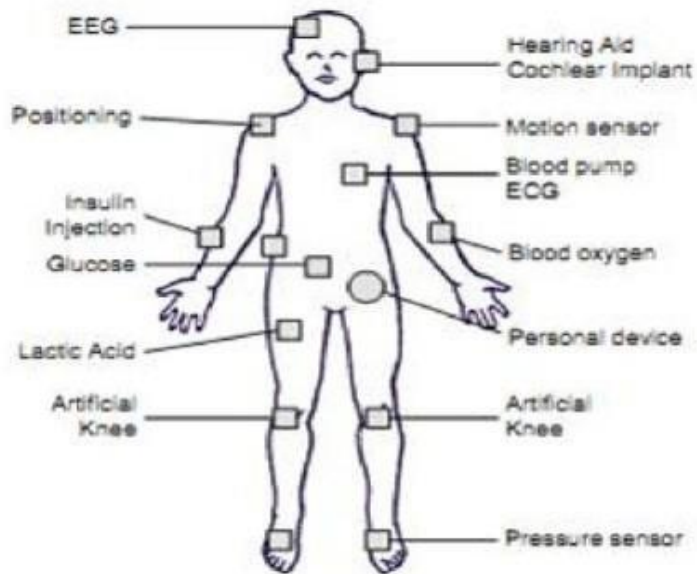
Abstract

Future communication systems are driven by the concept of being connected any-where at any time. This is not limited to even in medical area. Wireless medical communications assisting peoples work and replacing wires in a hospital are the applying wireless communications in medical healthcare.

The increasing use of wireless networks and the constant miniaturization of electrical devices has empowered the development of wireless body area networks (WBANs). In these networks various sensors are attached on clothing or on the body or even implanted under the skin.

These devices provide continuous health monitoring and real-time feedback to the user or medical personnel. The wire-less nature of the network and the wide variety of sensors offer numerous new, practical and innovative applications to improve healthcare and the quality of life. The sensor measures certain parameters of human body, either externally or internally. Examples include measuring the heartbeat, body temperature or recording a prolonged electrocardiogram (ECG).

Several sensors are placed in clothes, directly on the body or under the skin of a person and measure the temperature, blood pressure, heart rate, ECG, EEG, respiration rate, SpO2 levels etc. Next to sensing devices, the patient has actuators which act as drug delivery systems. The medicine can be delivered on predetermined moments, triggered by an external source or immediately when a sensor notices problem. The sensor monitors a sudden drop of glucose, a signal can be sent to the actuator in order to start the injection of insulin. Consequently, the patients will experiences fewer nuisances from his disease. An example of a medical WBAN used for patient monitoring.



A WBAN can also be used to offer assistance to the disabled. For example, a paraplegic can be equipped with sensors determining the position of the legs or with sensors attached to the nerves. In addition, actuators positioned on the legs can stimulate the muscles. Interaction between the data from the sensors and the actuators makes it possible to restore the ability to move.

Another example is aid for the visually impaired. An artificial retina, consisting of a matrix of micro sensors, can be implanted into the eye beneath the surface of the retina. The artificial retina translates the electrical impulses into neurological signals.

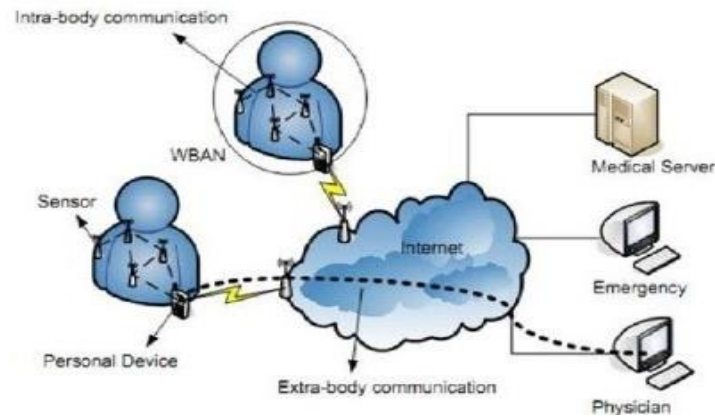
Another area of application can be found in the domain of public safety where the WBAN can be used by firefighters, policemen or in a military environment. The WBAN monitors for example the level of toxics in the air and warns the firefighters or soldiers if a life threatening level is detected. The introduction of a WBAN further enables to tune more effectively the training schedules of professional athletes.

Positioning WBANS

The protocols developed for WBANs can span from communication between the sensors on the body to communication from a body node to a data center connected to the internet. Thus communication in WBAN is divided into:

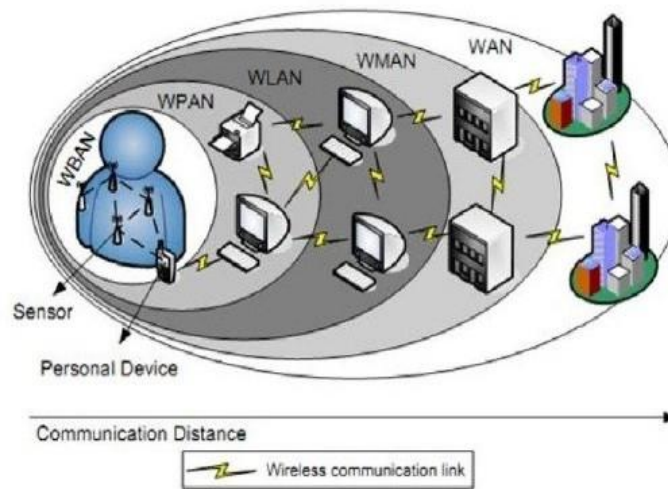
1. Intra body communication

2. Extra body communication



Intra-body and extra- body Communication in WBAN

Intra body communication controls the information handling on the body between the sensors or actuators and personal device. And extra body communication ensures communication between the personal devices and an external net-work . This segmentation is similar to the one defined in where a multi-tiered telemedicine system is presented. Tier 1 encompasses the intra-body communication, tier 2 the extra-body communication between the personal device and the Internet and tier 3 represents the extra-body communication from internet to the medical server. To date development has been mainly focused on building the system architecture and service platform for extra-body communication. Much of these implementations focus on the repackaging of traditional sensors (e.g. ECG, heart rate) with existing wireless devices. They consider a very limited WBAN consisting of only a few sensors that are directly and wirelessly connected to a personal device. Further they use transceivers with large and large antennas that are not adapted for use on a body.



In the fig, a WBAN is compared with other types of wireless networks, such as Wireless Personal (WPAN), Wireless Local (WLAN), Wireless Metropolitan (WMAN), and Wide area networks (WAN). A WBAN is operated close to human body and its communication range will be restricted to a few meters, with typical values around 1-2 meters. While a WBAN is devoted to interconnection of one person’s wearable devices, a WPAN is a network in the environment around the person.

Physical Layer

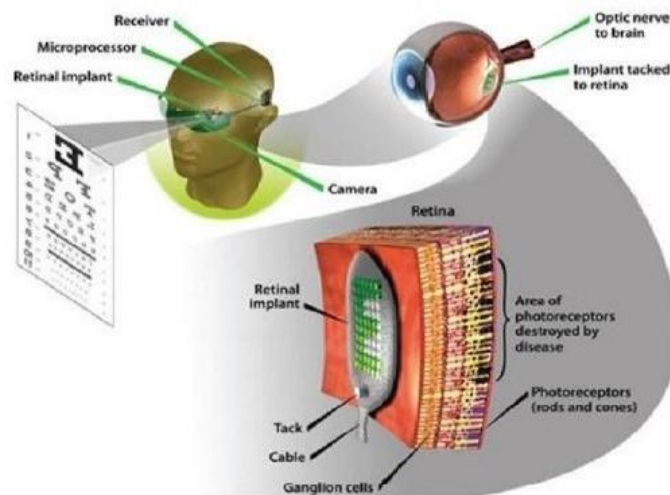
The characteristics of the physical layer are different for a WBAN compared to a regular sensor network due to the proximity of the human body. Tests with TelosB motes (using the CC2420 transceiver) showed lack of communications between nodes located on the chest and nodes located on the back of the patient. This was accentuated when the transmit power was set to a minimum for energy savings reasons. When a person was sitting on a sofa, no communication was possible between the chest and the ankle. Better results were obtained when the antenna was placed 1 cm above the body. As the devices get smaller and more ubiquitous, a direct connection to the personal device will no longer be possible and more complex network topologies will be needed. The characteristics of the propagation of radio waves in a WBAN and other types of communication are as follows.

RF Communication

There exists several path loss along and inside the human body either using narrowband radio

signals or Ultra Wide Band (UWB). All of them came to the conclusion that the radio signals experience great losses. Generally in wireless networks, the transmitted power drops off is defined as $P = dn$ (5.1) where d represents the distance between the sender and the receiver and n the coefficient of the path loss. In free space, n has a value of 2. Other kinds of losses include fading of signals due to multi-path propagation. The propagation can be classified according to where it takes place: inside the body or along the body. The body acts as a communication channel where losses are mainly due to absorption of power in the tissue, which is dissipated as heat. As the tissue is lossy and mostly consists of water, the EM-waves are attenuated considerably before they reach the receiver. In order to determine the amount of power lost due to heat dissipation, a standard measure of how much power is absorbed in tissue is used: the specific absorption rate (SAR). It is concluded that the path loss is very high and that, compared to the free space propagation, an additional 30- 35 dB at small distances is noticed. It is argued that considering energy consumption is not enough and that the tissue is sensitive to temperature increase. WBANs can also assist blind people. Patients with no vision or limited vision can see at a reasonable level by using retina prosthesis chips implanted within a human eye, as shown in Figure.

Artificial Retina



A WBAN is expected to be a very useful technology with potential to offer a wide range of

benefits to patients, medical personnel and society through continuous monitoring and early detection of possible problems. With the current technological evolution, sensors and radios will soon be applied as skin patches. Doing so, the sensors will seamlessly be integrated in a WBAN. Step by step, these evolutions will bring us closer to a fully operational WBAN that acts as an enabler for improving the Quality of Life.

Shivam Shrotriya(0808CS161151)

6. VANET

Abstract

This paper focuses on studying the studying the Vehicular ad hoc networks (VANETs) and current protocols which are used in VANETs. Vehicular Ad hoc Network (VANET) is a subset of Mobile Ad hoc Networks (MANET), which forms wireless networks between vehicles and where each vehicle acts as a router to communicate with other vehicle. Our research involves creating a new algorithm for a new proposed protocol. Our proposed protocol provides better reliability and on comparison and analysis with other protocols on the basis of average end to end delay and packet delivery ratio our protocol is performing better than other current protocols.

Introduction

Vehicular Ad hoc network is one of the promising research areas in wireless networks. VANETs integrate the features of Ad hoc network, Wireless and cellular technology to achieve intelligent transport systems by communicating between vehicle to vehicle or vehicle to RSUs. This is mainly due to DSRC (Dedicated Short Range Communications) standardization which enables vehicles and road side units to form VANETs. The Vehicle Ad hoc network is defined as a fast moving outdoor communication network, also known as SOTIS (self-organizing traffic information system).

In VANET, the moving vehicles can constitute a network communication by exchanging the speed and position information for another. Each node in the network has the ability to find the path, which adopted the multi-hop to deliver the information sent out from the source node finally to the destination node place through a series of forwarding. The network communication is made up of two parts: vehicle to vehicle (V2V) communication and vehicle to infrastructure (V2I) communication. VANET routing is classified into:-

1. Unicast: Vehicle to Vehicle communication
2. Multicast: Vehicle to multicast members through multi hop communication
3. Geocast: A subset of Multicast with communication targeted in a specific geographical location

4. Broadcast: Vehicle to all the vehicles in the coverage area.

The existing VANET routing protocol can be roughly divided into three categories:

- TBR, topology-based routing,
- PBR, position-based routing,
- Hybrid routing

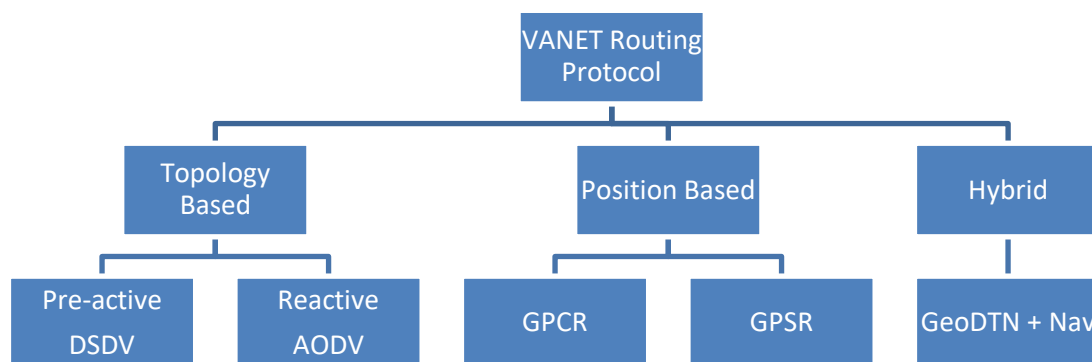


Figure 1 VANET Routing Protocol

Communication in VANET:

Information dissemination is very important in a VANET environment. Routing plays a vital role in information dissemination. By using Network coding we can improve the reliability of routing protocol in VANET. Communication networks nowadays share identical fundamentals of operation. Whether or not it's packets over the net, or signals in a very phone network, data is transported within the same means as cars share a road or fluids share pipes. That is, freelance information streams could share network resources, however the knowledge itself is separate. Routing, information storage, error management, and usually all network functions area unit supported this assumption. Network secret writing may be a recent field in scientific theory that breaks with this assumption. Rather than merely forwarding information, nodes could recombine many input packets into one or many output packets.

Linear network cryptography, in general, is comparable to the present example, with the distinction that the xor operation is replaced by a linear combination of the information, understood as numbers over some finite field. This enables for means far larger degree of flexibility within the way packets are often combined. Additionally to the outturn advantages proved during this example, network cryptography is additionally all right suited to environments wherever solely partial or unsure data out there for higher cognitive process. Like erasure cryptography, sure-fire reception of data doesn't rely upon receiving specific packet content however rather on receiving an adequate variety of freelance packets.

If we tend to linearly mix packets of length L , the ensuing encoded packet additionally has size L . In distinction to concatenation, every encoded packet contains solely a fraction of the data contained in original packets. One will think about linear network cryptography as a variety of data spreading. This encompasses a profit in several cases

Random network cryptography may be a straightforward nonetheless powerful secret writing theme, that in broadcast transmission schemes permits near best outturn employing a decentralized rule. Nodes transmit random linear combos of the packets they receive, with coefficients chosen from a Galois field.

Conclusion:

In this paper, we have study the various routing protocols to improve efficiency of VANET and how network coding is useful in VANET for many different purpose. Right now whatever work is done, does not support robust reliability means messages are lost due to frequently disconnectivity. So with the help of random linear network coding, we will incorporate above mechanism to improve reliability of VANET routing protocol.

Viplove Gome (0808CS161176)

7. IDS in MANET

Abstract

With the development of internet, network security becomes an indispensable factor of computer technology. The concept of Intrusion Detection System (IDS) proposed by Denning (1987) is useful to detect, identify and track the intruders. An intrusion detection system (IDS) is a device or software application that monitors network or system activities for malicious activities or policy violations and produces reports to a management station. The intrusion detection systems are classified as Network based or Host based attacks. The network based attack may be either misuse or anomaly based attacks. The network based attacks are detected from the interconnection of computer systems. The host based attacks are detected only from a single computer system and is easy to prevent the attacks. Data mining can help improve intrusion detection by adding a level of focus to anomaly detection [15]. It helps in to classify the attacks to measure the effectiveness of the system. In this paper, one scenario of false positive is considered. The false positive is the case in which the normal data is detected as attack. We are focusing on this problem with the help of an example & proposing one solution for the same problem. The KDD CUP 1999 data set is used. The result of experiment shows that if a class has higher number of counts then this class is considered as an anomaly class. But if the true person is crossing the threshold value of count it will be count as anomaly. To detect the true person & to remove false positive, one solution is proposed. A cluster is a collection of data objects that are similar to one another within the same cluster and are dissimilar to the objects in other cluster.

Categories of IDS

1. Signature Based Detection Systems: Signature based intrusion detection system (SBIDS) based on the known signature. This type of detection is more effective against known attacks, and it depends on the continuance updating signature. The main drawback of SBIDS is, it is unable to detect the unknown attacks and novel attacks, but the detection rate is higher than anomaly intrusion detection rates.

2. Anomaly Based Detection System: Anomaly based intrusion detection system (ABIDS) has

attracted many researchers due to its capability of detecting novel attack. Novel attack detection is technique for identification of unidentified attack that the machine learning system is not aware during training [10]. ABIDS has two main advantages over SBIDS, First is the ability to detect unknown and “zero day” attack. This is done by comparing the normal activity with that of deviation from them. Second one is the normal activity profile are customized for system, network and therefore making it very difficult for an attacker to know with certainty what activities it can carry out without getting detected [11]. The efficiency of the system depends on how well it is implemented and tested on all protocols. The major drawback of anomaly detection is defining its rule set.

3. Protocol Modeling: Protocol modeling is performed by analyzing network traffic for abnormal protocol activity and alerting on traffic with certain designated protocols or protocols that are unknown to the system. Protocol modeling relies on several different data sources to determine what normal protocol activity is. Common sources for this data may include protocol specification RFCs, popular applications that use that protocol, and thorough analysis of normal network traffic.

Conclusion:

In the current scenario, many people suffer from these when they have to open account with the help of internet banking & because of having more accounts they have more password in their memory. In case of encountering with three wrong attempts they are blocked by that bank’s website for next 24 hours. In this paper, the solution is given for the particular problem. So if this solution is followed by system the problem of false positive can be reduced. Another important thing happen is that now the time taken to find anomaly reduces to 3.2 seconds from 3.78 seconds. It is very important to find the intrusion as early as possible. Eliminating the count attribute give us way to improve efficiency of Intrusion detection system.

Rajat Kulkarni (0808CS161187)

8. Criminal Activities Analysis with Intelligent Tool

Abstract

This paper portrays a substance empowering framework that gives a controlled and secure component for the two exploited people and observers to report violations to police. The criminal following and wrongdoing recording framework is planned to cross over any barrier between the national and sheriff. A large number of violations go unreported in our nation as shown by national studies. In this paper, we intend to address the few issues and reasons that add to absence of announcing of violations. We are attempting to build up an on-line police headquarters to assist the nationals with reporting any wrongdoing with no ditherings. The on-line police headquarters would give an interface in light of virtual reality to give on-line help and general data. This virtual Police station will be observed by the on obligation officer who has the rights to see new reports and furthermore forward them to the concerned officer. The nationals would be required to enlist themselves to keep any Spam or phony report. Amid any enrollment the subject is likewise required to present some true records like License, by transferring them. Natives would need to login before detailing any wrongdoing though exercises like downloading frames, checking status can be performed without a login. Every part native would have an interesting profile where he can sign on to make reports, check status of permit and so on. Violations announced by the national would be checked by the Police Officers, who guarantee that reactions are suitably engaged, and that rare assets are all the more adequately utilized. This would help the nationals from multiple points of view, as well as the cops will be profited as well. Every one of the cases currently can be seen, refreshed and sent to some other police headquarters by individual officers. Our entrance would give component to store vast registers that contain criminal records and other imperative information which might be transmitted between police headquarters for learning. This would in this way bring all the Police stations onto a typical stage to share data.

Introduction

As of late, Internet clients have moved from being data buyers to being data suppliers. We will likely research if Internet and portable innovation can build detailing of carried out wrongdoings

to guarantee the requirement of law, regardless of whether individuals would utilize the Internet to report wrongdoing or not. Crimes that go unreported lay a noteworthy worry in our general public. Studies recommend that half of every vicious wrongdoing are never answered to the police. All together that we settle on better choices our general public has to know the significance of detailing any wrongdoing. At the point when subjects will know, the law implementation organizations will have the capacity to designate assets in light of the certainties got from nationals itself. There is a wide assortment of reasons why wrongdoings go unreported, and no single framework can take care of this issue. There is a need to research elective routes for individuals to report wrongdoings, and outline systems to guarantee openness, classification, secrecy, and security. Measurements on wrongdoing demonstrate a difference on the quantity of perpetrated violations versus the quantity of announced violations. As indicated by the Bureau of Justice, just 50% of every savage wrongdoing are accounted for to the police. For less genuine violations, for example, family or property wrongdoings, just a single third are accounted for. There has dependably been a requirement for a typical implies that serves between the police and the observers who fear reaching police. The paper is sorted out as pursues. The main area portrays the requirement for such a framework to be propelled. An essential review of the framework proposed is given to exhibit how it will enhance the general lawfulness organization in our nation.

Background

Crimes go unreported for several reasons. Personal issues and concerns about the criminal justice system dominated the reasons, according to the report. More victims of violent attacks express doubt that police can or will help. People don't report crimes because they feel it's not their business. Some are ashamed to report the crime, believe the crime is too insignificant to report, believe that reporting the crime will make no difference. According to the Report of the Committee on Crime Statistics, the reasons for Non-reporting of Crimes can be summed up as follows: 1. Crimes are mostly not reported because they are deemed 'not serious enough'. 2. 'Police could do nothing' indicates a belief that the police are helpless. It is an attitude of resignation on the part of citizens. 3. 'Fear/Dislike of Police' indicates negative attitude towards the Police.

Conclusion

Internet crime reporting is presumed to be a convenient alternative to address unreported crime. Individuals can file reports any time of day or night using the Internet. The witnesses or the victims can take their own time to report any crime in their words. This medium could serve best alternative to collect precious data related to a crime that might otherwise go unreported. The framework would decrease work for the ordinary Police Stations. With this the assets will be all the more viably utilized against guiltiness. The principle accentuation will be laid on the natives and accordingly there will be more trust in the organizations, more violations revealed, prepared information of new wrongdoings on the Net. The vast majority of the populace today utilizes Internet to accumulate data and we expect that individuals would utilize it adequately. This data would help the law requirement in figuring out where to give more assets. The people group everywhere would then be able to take better preventive measures. The law empowering expert can take the preferred standpoint to share data among different police headquarters. Majority of records can be put away and registers would be kept up effortlessly.

Shashwat Gupta (0808CS181155)

9. Measuring Universal Intelligence

Abstract

The idea of a universal anytime intelligence test is introduced here. The meaning of the terms “universal” and “anytime” is manifold: the test should be able to measure the intelligence of any biological or artificial system that exists at this time or in the future.

It should also be able to evaluate both inept and brilliant systems (any intelligence level) as well as very slow to very fast systems (any time scale). Also, the test may be interrupted at any time, producing an approximation to the intelligence score, in such a way that the more time is left for the test, the better the assessment will be.

In order to do this, the test proposal is based on previous works on the measurement of machine intelligence based on Kolmogorov complexity and universal distributions, which were developed in the late 1990s (C-tests and compression-enhanced Turing tests). It is also based on the more recent idea of measuring intelligence through dynamic/interactive tests held against a universal distribution of environments. Some of these tests are analysed and their limitations are highlighted so as to construct a test that is both general and practical. Consequently, ideas for a more recent definition of “universal intelligence” in order to design new “universal intelligence tests” are introduced, where a feasible implementation has been a design requirement. One of these tests is the “anytime intelligence test”, which adapts to the examinee’s level of intelligence in order to obtain an intelligence score within a limited time

MATHEMATICAL DEFINITIONS AND MEASURING INTELLIGENCE

Works on enhancing or substituting the Turing Test by inductive inference tests were developed, using Solomonoff prediction theory and related notions, such as the Minimum Message Length (MML) principle. This resulted in the introduction of induction-enhanced and compression enhance turing tests.

The basic idea was to construct a test as a set of series whose shortest pattern had no alternative projectible patterns of similar complexity. That means that the “explanation” of the series had to be much more plausible than other plausible hypotheses

The definition was given as the result of a test, called C-test, formed by computationally-obtained series of increasing complexity. The sequences were formatted and presented in a quite similar way to psychometric tests and, as a result, the test was administered to humans, showing a high correlation with the results of a classical psychometric (IQ) test on the same individuals. Nonetheless, the main goal was that the test could eventually be administered to other kinds of intelligent beings and systems. This was planned to be done, but the work from showed that machine learning programs could be specialised in such a way that they could score reasonably well on some of the typical IQ tests.

This unexpected result confirmed that C-tests had important limitations and could not be considered universal, i.e., embracing the whole notion of intelligence, but perhaps only a part of it. Other intelligent tests using ideas from algorithmic information theory or compression theory have also been developed. Recent works by Legg and Hutter , gave a new definition of machine intelligence, dubbed “universal intelligence”, also grounded in Kolmogorov complexity and Solomonoff’s (“inductive inference” or) prediction theory. The key idea is that the intelligence of an agent is evaluated as some kind of sum (or weighted average) of performances in all the possible environments. Taking Legg and Hutter’s definition of Universal Intelligence as a basis, a refinement and improvement of their work was done. First some issues require a clarification or a correction was addressed and, once they are clarified, an anytime universal intelligence test was developed.

ADDRESSING THE PROBLEMS OF UNIVERSAL INTELLIGENCE MEASUREMENT

The above definition captures one of the broadest definitions of intelligence: “the ability to adapt to a wide range of environments”. However, there are three obvious problems in this definition regarding making it practical. First, we have two infinite sums in the definition: one is the sum over all environments, and the second is the sum over all possible actions (agent’s life in each environment is infinite). And, finally, K is not computable.

Thus, just making a random finite sample on environments, limiting the number of interactions or cycles of the agent with respect to the environment and using some computable variant of K , is sufficient to make it a practical test.

4.1 SAMPLING ENVIRONMENTS

Among the infinite number of environments, many environments (either simple or complex) will be completely useless for evaluating intelligence, e.g., environments that stop interacting, environments with

constant rewards, or environments that are very similar to other previously used environments, etc. Including some, or most, of them in the sample of environments is a waste of testing resources; if we are able to make a more accurate sample, we will be able to make a more efficient test procedure. In an interactive environment, a clear requirement for an environment to be discriminative is that what the agent does must have consequences on rewards.

Without any restriction, many (most) simple environments would be completely insensitive to agents' actions. So, number of environments are restricted to be sensitive to agents' actions. That means that a wrong action (e.g., going through a wrong door) might lead the agent to part of the environment from which it can never return, but at least the actions taken by the agent can modify the rewards in that subenvironment. More precisely, we want an agent to be able to influence rewards at any point in any subenvironment. Such an environment is known as reward sensitive environment.

TIME AND INTELLIGENCE

The definition given above is now feasible and stable with respect to varying m and n_i . But there is no reference to physical time. Universal test had been considered to be generalising C-test from passive environments to active environments. Time should be considered in the measurement. Therefore, reference to time is important. the use of physical time may refer either to the environment or to the agent since both interact and both of them can be either fast or slow. If we consider how physical time may affect an environment, i.e., the environment's speed, it is unacceptable to have an interactive test where the agent has to wait several hours after each action in order to see the reward and the observation.

On the other hand, when we generally refer to time when measuring intelligence, especially in noninteractive tests, it is assumed that we are talking about the agent's speed. Slow agents cannot be considered equal with fast agents. 5.1 TIME AND REWARDS Consider time either as a limit to get agents' actions or as a component of the final score. there are many options for incorporating time. Considering that we have an overall time τ for an environment, one option is to set a time-out τ_0 for each action (with $\tau_0 \leq \tau$) such that if the agent does not select an action within that time, reward 0 is given (or a random action is performed). The shorter the time-out is, the more difficult the test is. An alternative possible solution would be to set a fixed time, a time-

slot τ_s (instead of a time-out) for each interaction (with $\tau_s \leq \tau$). But, again, given an overall time τ , we do not know how much slots we need to generate.

Considering (randomly chosen) different-length time-slots for several interactions, a quick agent would be able to perform appropriate actions for more interactions than a slow agent with the same potential intelligence. However, it is not easy to tune these time-slots independently from the agent and, in any case, it is not very sensible to make the agent wait for some observations and rewards if we want to make a practical and efficient test.

As a result, if we do not assign time-slots, necessarily the rewards obtained in an environment during an overall time τ must be averaged, otherwise very fast but dull (slightly better than random) agents would perform well. The natural idea is to average by the number of interactions that the agent finally performs in time τ . However, a shrewd policy here would be to act as a fast random agent until the average reward becomes larger than a threshold (this can happen with greater or lower probability depending on the threshold) and then stop acting. For instance, consider an agent that performs one action randomly. If the reward is positive, then stop (no other action is performed). If the reward is negative, then act fast and randomly until the average reward is positive and then stop. Note that this strategy ensures a positive reward in balanced environments. Consequently, an agent could get a very good result by very fast (and possibly lucky) first interactions and then rest on its laurels, because the average so far was good.

DISCUSSION ON THE NEW INTELLIGENCE MEASURE

The following items summaries the main features of the various new intelligence tests we have introduced:

- The distribution of environments is based on K_{tmax} (a bounded and computable version of K). There are many reasons for this: we cannot wait indefinitely for the environment; it is also computable and allows us to make the sample.
- The definition now includes a sample of environments, instead of all environments. The most important constraint to make this sample more discriminative is that the environment must be reward-sensitive.

- In the anytime versions of the test, the complexity of the environments is also progressively adjusted in order to make the test more effective and less dependent on the chosen distribution and preference over simple or complex environments.
- Interactions are not infinite. Rewards are averaged by the number of actions instead of accumulated. This makes the score expectation less dependent on the available test time.
- Time is included. The agent can only play with a single environment for a fixed time. This time limit progressively grows to make the test anytime.
- Rewards and penalties are both included (rewards can range from -1 to 1). Environments are required to be balanced, meaning that a random agent would score 0 in the limit in these environments. Otherwise, a very inept but proactive/quick agent would obtain good results.

CONCLUSION AND FUTURE WORKS

A very important challenge which might have strong and direct implications in many fields (e.g., artificial intelligence, psychometrics, comparative cognition, and philosophy) were given through these concepts. A set of tests and, especially, an anytime intelligence test that can be applied to any kind of intelligent system (biological or artificial, fast or slow) were developed. The name anytime comes from the idea that we can obtain a rough approximation of the intelligence of an agent in a small amount of time and much better approximations in more time.

The term also originates from the fact that we introduce time in the definition of intelligence and we also adapt the time scale to the agent's in order to be able to evaluate very slow and very fast intelligent agents, by also incorporating these times into the measurement. The acceptance and use of these tests could allow new research breakthroughs to take place:

Progress in AI could be boosted because systems could be evaluated.

- New generations of CAPTCHAS that take the ideas of -anytime intelligence test could be evolved.
- Certification would be devised to decide whether an unknown agent can be accepted as a service or a project.
- In the long term, these tests will be necessary to determine when we reach the “Technological Singularity”.

It represents the point at which one intelligent system is capable of constructing another intelligent system of the same intelligence. Much needs to be done on the reliability and optimality of the test. Constructs from Computerized Adaptive Testing and Item Response Theory (IRT) can be adapted here. The relation between speed and intelligence is also an area where further research is needed. It may be possible to develop tests that are able to measure intelligence and speed at the same time, without a batch combination of tests. There is also much theoretical work ahead.

Some of the assumptions made in some of the definitions could be presumably refined or improved. Some theoretical results could be obtained for some of the tests (convergence, optimality, etc.), as well as some expected scores proven for different kinds of agents and classes of environments.

Tanay Bhatey (0808CS161171)

10 Intranet Compiler in PHP

Abstract

Most compilers require high-end machines to operate. However, not all educational institutes are capable of with-holding its implementations, monitoring and its maintenance costs. So, compilers over cloud would be a better option both for internet as well as intranet. The services can be access from terminal devices to hand-held devices. With the advent of new era of digitalization, technologies along with internet are volubly increasing, providing a huge relief from installation, maintenance and memory head-aches. So, here we came up with the SAAS compilers package. This will not only saves time, memory, financial cost but also maintenance cost of an educational institutions.

Introduction

With the increasing competitive demeanour of all educational institutions, almost each education institutes faces two most (peak) difficulties, one is to provide all its students a higher level of knowledge and education and secondly the cost to provide these. However there are many educational institutes which are financially not too strong to handle so costly software over each and every device.

Also, the students face greatest problem is that they are bound to devices for compilation and execution of their programs. If any system or device doesn't have a particular compiler of any language in it then the students won't be able to proceed further. Moreover each language have its own compiler, so it's mandatory to have that particular compiler within the device. Moreover, keeping compilers at particular device may lead to excessive memory utilization, installation and maintenance costs. Not stubbed to these many a times weak internet facilities cause a major drawback for use of compilers available online. Along with it its quite cumbersome and uneasy for faculties to keep a track of programs and activities that students have created. That too just from a single place at a single point. So, in order to compete with these difficulties we have proposed online compiler over an intranet. IJSER staff will edit and complete the final formatting of your paper.

Related Work

Software as a Service is a distribution model of software where applications are hosted by a vendor or service provider and made available to customers over a network, widely the Internet.

Now days, SAAS can also be used in intranet within in an organization. From this we can get enormous benefits such as users need not install software such as a Language compiler in their system, controlled intranet, security, timely backups, better utilization of Unused Server clock, and collaboration of Events over a calendar. The Objective of this system is to implement SaaS (without an active internet connection) in Intranet. For instance the use of remote desktops or the vm wares that provides the facility of providing operating system virtually.

ONLINE COMPILER FEATURES

1. Use even with low network range: the compiler could be used over an intranet via LAN so can easily work even if there is no internet facilities / internet connection.
2. Reusability of codes: the student can save its code over a cloud so that it can re-use them again and again whenever required to him.
3. On demand access: it can be accessible on demand of the user.
4. Device independent: the application can be access over desktop devices and even to hand held devices. Hence, making it device independent.
5. Easier accessible: the application is easily available to user; user only requires the browser to access it.
6. Security: each user has its own unique password and ID which offers him a security to its own codes.
7. No installation: only installed at server, the software need not to be installed each time. Only a copy of application is send to corresponding requests.

Experimental Results

The compiler is centralized and enables the users to execute as per the requirements of the students and other programmers. When a user enters programs in the text field the code is sent to the server and is executed inside its environment. The output of the code is displayed in the output text field, errors if any are sent to the errors text field from the server in which the execution of the code takes place.

Conclusion:

In this work, presented an online compiler system in the domain of Networks of Computers is achieved. The compiler is centralized and allows the users to compile and execute programs

according to the requirements of the students or the programmers. The other major benefit of the system is doesn't need to maintain separate compilers at the client side and converting documents file into various formats.

1. Cost Effective: - The proposed system is cost effective in terms of money because it does not required purchasing a license of particular compiler. Further, the educational institutes need not to keep and pay for multiple of software on each device.

2.Memory:-The proposed system saves memory because user does not required to maintain files on system also doesn't required to install all compiler on system.

3. Installation: - There is no need to install in every computer, and if one computer corrupts then user can access the application online. Even if the system is rebooted or scanned then also the files of students along with their previous work can be easily gathered.

4. Security:-It also ensures security. The students can secure their files safely on their own account folder and further can reuse again. Their folders are saved via their own passwords and emails.

Ritansh Bangre (0808CS161134)

Department Of Computer Science & Engineering
IPS Academy, Institute of Engineering and Science
Rajendra Nagar, A.B. Road, Indore 452012
Tele fax0731-4014602 Phone: 4014853, 4014856
E-mail: hod.compsec@ipsacademy.org, officecse@ipsacademy.org

