

# The 2<sup>nd</sup> International Research Conference on Emerging Information Technology and Engineering Solutions (EITES - 2015)

February 20-21, 2015 | SCIT, Pune-India | Website: <http://www.scit.edu/eites2015>



THE BEST WILL SPEAK, THE FINEST WILL HEAR  
IF YOU ARE UP TO **IT**, YOU WON'T MISS **IT**

## Final Program & Abstracts

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**Organised by:** Faculty of Computer Studies, Symbiosis International University, India  
**Hosting Institute:** Symbiosis Centre for Information Technology, Pune, India  
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# Prelude

Faculty of Computer Studies (FoCS), Symbiosis International University in collaboration with School of Information Science and Engineering, Ritsumeikan University, Japan - Welcomes You All in **the 2nd International Research Conference on Emerging Information Technology and Engineering Solutions (EITES 2015)** to be held at **SCIT, Pune, India** on **20-21 February 2015**. The conference intends to address the solution space that has been created and enriched by the research in emerging IT and associated engineering practices. All accepted & presented papers will be published in conference proceedings by **Conference Publishing Services (CPS)** and will be submitted to **Xplore and CSDL**.

EITES 2015 brings researchers from industry and academia together to share the knowledge attained in specific areas of the field. The conference ensures presentation and discussion on quality research of recent times. Plenary sessions by recognized researchers and presentation of rigorously reviewed research papers are the major attractions for the research fraternity across industry and academia.

The **1st International Conference on Emerging Information Technology and Engineering Solutions (EITES 2012)** was held in **February 2012**. Some of the highlights have been:

- Address by Eminent Speakers.
- Quality Review Process was highly appreciated. Acceptance Ratio was 8.33.
- Proceedings were published in the special issues of American Journal of Engineering and Applied Sciences(IJEAS), volume 5, issue: 3, 2012 by Science Publications.
- Three extended papers were published in International Journal of System Assurance Engineering and Management, volume: 3, Issue: 2, June 2012, Springer.
- Two extended papers were published in SCIT Journal 2012, volume: XII, August 2012.
- Tutorials on SCADA Systems and Business Intelligence; Round Table discussion on Emerging IT and Opportunities for India

EITES 2015 upholds the same quality and standard. All accepted & presented papers will be published in conference proceedings by **Conference Publishing Services (CPS)** and will be submitted to **Xplore and CSDL**.

# EITES 2015

The rapid pace of change in Information Technology has been intimidating for large and small businesses. The level of difficulty in decoding the power of technology and associated engineering may be varying for different businesses considering their experience and expertise but one cannot overrule the inherent complexity of the field.

EITES 2015 intends to address the solution space that has been created and enriched by the research in emerging IT and associated engineering practices.

## TRACKS

### **A. Unified Communication and Collaboration**

- a. Unified Communication
- b. Composite Content Management
- c. Communication Enabled Business Processes
- d. Personalization, Collaboration
- e. Socialization

### **B. Pervasive and Access Based Computing**

- a. Pervasive Computing
- b. Context Aware and Presence Based Computing
- c. Ubiquitous Computing
- d. Internet of Things

### **C. Service Oriented Computing**

### **D. Cloud Computing and Virtualization**

### **E. Software Processes**

### **F. High Performance Computing**

- a. High Performance Data Analysis
- b. High Performance Cloud Computing

### **G. Online Social Networks**

- a. Modeling Social Networks and Behavior
- b. Management of Social Network Data
- c. Analysis of Social and Crowd Sourcing Systems
- d. Privacy and Security in Social Systems

### **H. Latest Emerging Areas in Information Technology & Engineering Solutions**

# Conference Committee

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- **Dr. S.B. Mujumdar**, Chancellor, Symbiosis International University, India

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- **Dr. Vidya Yeravdekar**, Principal Director, Symbiosis Society, India.

## Adviser

- **Dr. Rajani Gupte**, Vice Chancellor, Symbiosis International University, India

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- **Prof. (Dr.) Joo-Ho Lee**, School of Information Science and Engineering, Ritsumeikan University, Japan.
- **Prof. (Dr.) Chittaranjan Hota**, Department of Computer Sc. & Information Systems, Birla Institute of Technology & Science-Pilani, Hyderabad Campus, India.
- **Prof. (Dr.) G. S. Mani**, Former Director, & Dean, Institute of Armament Technology Pune, India.
- **Dr. Vinay Vaidya**, Centre for Research in Engineering Sciences and Technology, KPIT Technologies, Pune, India

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- **Prof. (Dr.) Urvashi Rathod**, Symbiosis Centre for Information Technology, India.

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- **Prof. (Dr.) Ajey Kumar**, Symbiosis Centre for Information Technology, India.
- **Prof. (Dr.) Hideyuki Takada**, School of Information Science and Engineering, Ritsumeikan University, Japan.

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- **Prof. (Dr.) Tetsuo Kamina**, Ritsumeikan University, Japan.
- **Prof. (Dr.) Udai Shanker**, Madan Mohan Malaviya University of Technology, India.
- **Dr. Zeeshan Ahmed**, University of Wuerzburg, Germany.

# Welcome Message



**Dr. S.B. Mujumdar**

Dear Brother/ Sister,

On behalf of Symbiosis, I would like to welcome all of you to the 2<sup>nd</sup> International Research Conference on *Emerging Information Technology and Engineering Solutions 2015* (EITES 2015) at Symbiosis Center for Information Technology (SCIT), Pune, India.

Established in 1971, primarily to promote world understanding between Indian and foreign students through education, Symbiosis International Cultural & Educational Centre runs 41 academic institutions ranging from kindergarten to institutes for postgraduate studies in Management, Mass Communication, Medico-Legal Systems, Foreign Languages, Information Technology, Computers etc. We at Symbiosis believe that 'The world is one family'.

SCIT understands that the rapid pace of change in Information Technology has been intimidating for large and small businesses. The level of difficulty in decoding the power of technology and associated engineering may be varying for different businesses considering their experience and expertise but one cannot overrule the inherent complexity of the field.

Finally, I would like to express my deep gratitude to all the delegates for coming from all over the world and expect you will be enjoying EITES 2015 in the historical city Pune, India

With warm regards and good wishes,

**Dr. S. B. Mujumdar,**  
Chief Patron- EITES 2015  
Chancellor, Symbiosis International University, Pune, India

# Welcome Message



It gives me great pleasure to invite you the 2<sup>nd</sup> International Research Conference on *Emerging Information Technology and Engineering Solutions 2015* (EITES 2015) at Symbiosis Center for Information Technology (SCIT), Pune, India.

Since its inception, SCIT has maintained the legacy of innovative growth and excellence. Our students are industry focused and know how to harness the technology and blend it with business to gain competitive edge. This is a testimony to the trust and belief that the industry has bestowed upon us for the past ten years and more importantly a commitment from SCIT to deliver the best consistently. The time comes again for us to share with you the excitement of interacting with the best minds we have at EITES 2015.

I sincerely hope that EITES 2015 will be a worthwhile opportunity for strengthening our already existing bonds and forging new ones with researchers from around the world.

With regards and good wishes,

**Dr. Rajani Gupte**  
Adviser-EITES 2015  
Vice Chancellor, Symbiosis International University, Pune India

# Welcome Message



I am very glad to have the opportunity to welcome the participants of the Second International Research Conference on Emerging Information Technology and Engineering Solutions 2015 (EITES 2015) at the Symbiosis Center for Information Technology (SCIT), Pune, India.

The Symbiosis Centre for Information Technology (SCIT) is a premier IT business school, which has been nurturing genuine IT talent since its inception. In the present fast-growing IT industry, it is very important to stay in step with the advancements in the field. The Institute fosters a spirit of learning that encourages knowledge-generation, innovation, and research. The Conference on EITES 2015 is an initiative to enhance the learning environment for the IT fraternity.

I am very confident that the Conference on EITES 2015 will serve as a valuable platform to bring together academics, researchers, and other contributors to the field of IT, thereby facilitating cross-exchange of ideas and innovation. I wish the participants every success in making the Conference a milestone achievement.

**Dr. Vidya Yeravdekar**  
Patron, EITES 2015  
Principal Director, Symbiosis, Pune, India.



# Welcome Message



**Prof. (Dr.) R. Raman**

Dear All,

It is my pleasure to welcome you to the second International Research Conference on Emerging Information Technology and Engineering Solutions (EITES) 2015, held at SCIT, Pune, India. EITES 2015 is being organized by Faculty of Computer Studies (FoCS), Symbiosis International University (SIU) in collaboration with School of Information Science and Engineering, Ritsumeikan University, Japan.

The conference intended to address the solution space that has been created and enriched by the research in emerging IT and associated engineering practices. All accepted and presented papers will be published in conference proceedings by Conference Publishing Services (CPS) and submitted to Xplore & CSDL.

I am thankful to the entire faculty and staff members of SCIT for hosting this conference and their dedication throughout the entire process. Last but not least, I would like to thank the chief patron, patron, adviser, and all the conference committees. Again, welcome to the conference. We hope you enjoy the conference and have an excellent value add through the deliberations and discussion!

**Prof. (Dr.) R. Raman**  
Dean FoCS, Symbiosis International University, Pune India

# Welcome Message



Symbiosis Centre for Information Technology (SCIT) proudly presents its second international conference ETIES 2015 in collaboration with School of Information Science and Engineering, Ritsumeikan University, Japan. This is inspired by the success of EITES 2012 which witnessed high quality paper presentations and publication of the same in reputed international journals. EITES 2015 is conceptualized with the intent to bring technological advancements and engineering solutions to a single platform where researchers, academicians and industry experts share their knowledge and present their research work. SCIT has a strong research focus and developed a culture of collaborative research among academicians and industry experts. We look forward to further our research exposure through this conference in addition to the research projects, discussions, knowledge sharing and publications that we undertake regularly.



We received submissions in Unified Communication and Collaboration, pervasive computing, High Performance Computing, Software Processes and other emerging technological trends. The submissions went through a rigorous review process and high quality papers were selected for presentation in the conference. The International Program Committee (IPC) has reviewed the papers and the acceptance ratio is 24.5%. The papers that were not recommended by IPC were also of good quality and we believe that the reviewers' comments will help the authors in enhancing their work and further send it for publication in such reputed conference. The conference proceedings will be published by Conference Publishing Services (CPS) and will be submitted to Xplore and CSDL. We have received appreciation from CPS for quality review and execution of conference formalities.

We welcome all participants for the conference and hope you have an excellent value add and exposure with the international research community.

**Prof. (Dr.) Dhanya Pramod**  
**Prof. (Dr.) Urvashi Rathod**  
General Chairs -EITES 2015

# Welcome Message



Prof. (Dr.) Ajey Kumar

It is our great pleasure to welcome you in the 2nd International Research Conference on Emerging Information Technology and Engineering Solutions (EITES 2015) held at SCIT, Pune, India on 20-21 February 2015. The conference intended to address the solution space that has been created and enriched by the research in emerging IT and associated engineering practices.

EITES 2015 was held in collaboration with School of Information Science and Engineering, Ritsumeikan University, Japan and upheld the same quality and standards as that of EITES 2012. The solicitation of full papers, submissions, reviews and results were totally done using the EDAS conference management system.

We would like to express our deep gratitude to all the Technical Program Committee members and reviewers for accepting our invitation to get associated with EITES 2015 and performing high quality reviews. Your reviews helped us to select the best quality of papers in various emerging areas in IT.

Our sincere gratitude goes to all the researchers/authors who selected EITES over other conferences for submitting their research papers. A big thanks to Conference Publishing Services (CPS) for publishing the conference proceedings. We would like to thank Keynote Speaker and Plenary Speakers for providing a platform for listeners about research leading to the upcoming technologies and engineering solutions.



Prof. (Dr.) Hideyuki Takada

We also wish to take this opportunity to thank all conference committee chairs and supporting organizations of EITES 2015, especially Steering Committee Members and General Chairs for their support and guidance. A special *thanks* is *also* extended to Chief Patron, Patron, Adviser of EITES 2015 and Dean FoCS.

**Prof. (Dr.) Ajey Kumar**  
**Prof. (Dr.) Hideyuki Takada**  
Program Chairs -EITES 2015

# Programme @ a Glance

<b>Day 1: Friday, 20<sup>th</sup> February 2015</b> <b>Venue: SIC Auditorium, Symbiosis Centre for Information Technology (SCIT)</b>	
9:30 AM - 10:00 AM	<b>Inauguration and Address by</b> <b>Dr. S.B. Mujumdar</b> , <i>Chancellor, Symbiosis International University, Pune, India</i> <b>Dr. Rajani Gupte</b> , <i>Vice Chancellor, Symbiosis International University, Pune, India</i> <b>Dr. Vidya Yeravdekar</b> , <i>Principal Director, Symbiosis Society, Pune, India</i> <b>Dr. R. Raman</b> , <i>Dean FoCS, Symbiosis International University, Pune, India</i> <b>Dr. Dhanya Pramod</b> , <i>Director, Symbiosis Centre for Information Technology, Pune, India</i>
10:00 AM – 11:00 AM	<b>Keynote: Policy Management for Autonomic Data Management</b> <b>Dr. Mukesh Mohania</b> , <i>IBM Master Inventor &amp; Distinguished Engineer, India.</i>
11:00 AM – 11:30 AM	TEA BREAK
11:30 AM – 12:30 PM	<b>Plenary-I: Instant Collaboration Environments using Tablet Terminals</b> <b>Prof. (Dr.) Hideyuki Takada</b> , <i>School of Information Science and Engineering, Ritsumeikan University, Japan</i>
12:30 PM - 1:30 PM	LUNCH
1:30 PM – 2:30 PM	<b>Plenary II : Security Threat Monitoring in Large Scale University Networks: Big-Data Analytics to the Rescue</b> <b>Prof. (Dr.) Chittaranjan Hota</b> , <i>Department of Computer Sc. &amp; Information Systems, Birla Institute of Technology &amp; Science-Pilani, Hyderabad Campus, India</i>
2:30 PM - 4:00 PM	<p style="text-align: center;"><b>Paper Session I</b></p> <b>Non-Exclusive Clustering: A Partitioning Approach</b> Nitesh Agarwal , H. A. Ahmed and D. K. Bhattacharyya, <i>Heritage Institute of Technology Kolkata, Tezpur University Napalm, India</i>
	<b>Bounded-SVD: A Matrix Factorization Method with Bound Constraints for Recommender Systems</b> Bang Hai Le, Kien Quang Nguyen and Ruck Thawonmas, <i>Ritsumeikan University, Japan</i>
	<b>Enhanced K-Strange Points Clustering Algorithm</b> Terence Johnson and Santosh Kumar Singh, <i>AMET University Chennai, Thakur College of Science and Commerce Kandivali (E) Mumbai, India.</i>
4:00 PM – 4:30 PM	TEA BREAK
6:30 PM – 9:00 PM	<b>Cultural Program by EKLAVYA followed by Dinner</b>

**Day 2: Saturday, 21<sup>st</sup> February 2015**

**Venue:** SIC Auditorium, Symbiosis Centre for Information Technology (SCIT)

10:00 AM – 10:30 AM	TEA BREAK
10:30 AM – 11:30 AM	<b>Plenary III: Swarm Intelligence – An exciting field for Research</b> <b>Prof. (Dr.) G. S. Mani</b> , <i>Former Director &amp; Dean, IAT, Pune, India.</i>
11:30 AM – 1:00 PM	<b>Paper Session II</b> <b>Scalable Honeypot Architecture for Identifying Malicious Network Activities</b> Gokul Kannan Sadasivam and Chittaranjan Hota, <i>BITS-Pilani Hyderabad Campus, India</i> <b>Efficient LALRED for Congestion Avoidance using Automata-Like Solution</b> Shalu G. Mahaja, <i>MGM's College of Engineering Nanded, India</i> <b>Optimized Technique For Capacitated Minimum Forest Problem In Wireless Sensor Networks</b> Shwetal R. Jaiswal, <i>K. S. Institute of Engineering and Technology, Hingoli, India</i>
1:00 PM – 2:00 PM	LUNCH
2:00 PM - 3:00 PM	<b>Plenary IV: SDN &amp; NFV – Key Trends in Network Transformation</b> <b>Mr. Raj Sahakari</b> , <i>Tech Mahindra, Pune, India</i>
3:00PM – 4:00 PM	<b>Paper Session III</b> <b>Heuristic-based Real-Time P2P Traffic Identification</b> Jagan Mohan Reddy and Chittaranjan Hota, <i>BITS-Pilani Hyderabad Campus, India</i> <b>Experiments in Encrypted and Searchable Network Audit Logs</b> Bhanu Prakash Gopularam, Sashank Dara and Nalini Niranjana, <i>Cisco Systems India Pvt. Ltd, IIIT-Bangalore, Nitte Meenakshi Institute of Technology Bangalore, India</i>
4:00 PM - 4:30 PM	TEA BREAK
4:30 PM - 5:00 PM	<b>Valediction Ceremony</b>

# Speakers



## **Keynote: Policy Management for Autonomic Data Management**

10:00 AM – 11:00 AM, Friday, February 20, 2015

**Dr. Mukesh Mohania**, IBM Master Inventor & Distinguished Engineer, India.

**Abstract:** Most of the organizations are doing their businesses on-line and the popularity of e-Business has led to an exponential and unstructured growth in the applications space coupled with an increase in the database size. Particularly, Internet enabled services have led to an increase in the size and complexity of the database making its administration task very complex. Moreover, organizations are increasingly concerned about the privacy of data that they manage. Thus, managing such large ever growing and privacy-preserving database is complex and time-consuming task. In this talk we discuss policy-based framework for autonomic data management and highlight the various features of autonomic database system and then discuss the various algorithms that we have designed and implemented in our policy execution engine.



## **Plenary I : Instant Collaboration Environments using Tablet Terminals**

11:30 PM – 12:30 PM, Friday, February 20, 2015

**Prof. (Dr.) Hideyuki Takada**, Vice-Dean & Professor, at College of Information Science and Engineering, Ritsumeikan University

**Abstract:** Recent advancements of mobile technology have been leading to the change of styles in sharing information among users. Traditional ways of sending information such as e-mail and instant messaging do not fit into the situation where co-located users exchange the contents stored in their tablet terminals. In this talk, we will present several new ways of exchanging and sharing contents, which support collaboration among co-located users. These ways exploit the technology equipped with tablet terminals, such as motion sensors, cameras and the P2P networking environment. We will also show how users can collaborate and achieve their tasks using these environments with some examples.



## **Plenary II : Security Threat Monitoring in Large Scale University Networks: Big-Data Analytics to the Rescue**

1:30 PM – 2:30 PM, Friday, February 20, 2015

**Prof. (Dr.) Chittaranjan Hota**, Associate Professor of Computer Science & Engineering and the Associate Dean (Admissions) at BITS-Pilani, Hyderabad Campus, Hyderabad.

**Abstract:** Digital information available is increasing 10 folds every five years in a scale of zetabytes. As the volume of data being gathered and stored around the globe is exploding and the cost of Analytics, Machine learning, Statistics, and Networking is falling, researchers and industry professionals are beginning to realize the potential of Big-data to identify the needs of common man and provide services that can make their life better. In this talk, after briefly addressing the challenges of Big-data, we will discuss application of these concepts in identifying security threats in large scale University campus networks. With the proliferation of systems like Tor, it is critical to consider the impact of overlay networks on the security landscape of a University network that is mostly used by young students in various newer ways in Indian context. Although network administrators use Universal Threat Management (UTM) solutions at the perimeter, there exists multiple ways of bypassing these controls. Some of the techniques used by

proprietary solutions use port-based and protocol-based analysis to handle these threats. With huge amount of traffic (in the order of terabytes per day) consisting of structured, semi-structured, and unstructured data in the network traces, traditional ways of threat monitoring is becoming a challenge. In this talk, we shall explore newer ways of identifying network threats using Big-data analytics approaches. We shall explore usage of Hadoop, and Machine learning techniques to intelligently discover hidden patterns (malicious activities), unknown correlations and other useful information that can be used to make better decisions for Threat monitoring in a University network.



### **Plenary III: Swarm Intelligence – An exciting field for Research**

10:30 AM – 11:30 AM, Saturday, February 20, 2015

**Prof. (Dr.) G. S. Mani**, Former Director & Dean, Institute of Aviation Technology, Pune.

**Abstract:** Swarm Intelligence is a relatively new interdisciplinary field of research, which has gained huge popularity in these days. Algorithms belonging to this domain has drawn inspiration mainly from the collective intelligence emerging from the behaviour of a group of social insects. When acting as a community, these insects even with very limited individual capability can cooperatively perform many complex tasks necessary for their survival.

Historically, the phrase Swarm Intelligence (SI) was coined by Beny and Wang in late 1980s in the context of cellular robotics. Group of researchers in different parts of the world started working almost at the same time to study the versatile behaviour of different living creatures and especially the social insects. The efforts to mimic such behaviours through computer simulation finally resulted into the fascinating field of Swarm Intelligence. The concept of SI has now been extended to include all distributed problem-solving efforts inspired by collective behaviour of social insect colonies.

Application of swarm Intelligence to various areas are based on principles of Proximity, Quality, Diverse Response, Stability and Adaptability. In recent years, SI has found applications in diverse disciplines including Communications, Control, Civil engineering, Robotics, Learning Systems as well as modelling of social systems.

The talk proposes to introduce the topic, explain working principles of some of the SI algorithms and their applications in different areas. The emphasis will lie on the research areas and challenges in this field.



### **Plenary IV: SDN & NFV – Key Trends in Network Transformation**

2:00 PM – 3:00 PM, Saturday, February 20, 2015

**Mr. Raj Sahakari**, Principal Consultant, Tech Mahindra, Pune

**Abstract:** Software Defined Networks (SDN) and Network Functions Virtualization (NFV) are two key transformational technology paradigms that will help service providers to evolve their static networks into dynamic and agile networks, using cloud technologies. This talk will provide an overview of SDN & NFV technologies, the benefits, challenges & opportunities they create and how these technologies are expected to drive a sea change in the way networks are designed and operated.

# Paper Session I

## **Non-Exclusive Clustering: A Partitioning Approach**

Nitesh Agarwal , H. A. Ahmed and D. K. Bhattacharyya, *Heritage Institute of Technology Kolkata, Tezpur University Napalm, India*

**Abstract:** Non-exclusive clustering is a partitioning based clustering scheme wherein the data points are clustered such that they belong to one or more clusters. Usually in real world applications, the datasets that we work with are not entirely exclusive in nature. In applications such as gene expression data analysis and satellite image processing, non-exclusive algorithms need to be employed for better and more accurate cluster analysis. Therefore, we intend to tackle such problems with a non-exclusive clustering algorithm, closely determined by a nonexclusivity score (NES). The NES is based on a feature class correlation measure, which helps to determine the significant overlap between the data points in the dataset and aids us in comprehending the clusters to which they belong to.

## **Bounded-SVD: A Matrix Factorization Method with Bound Constraints for Recommender Systems**

Bang Hai Le, Kien Quang Nguyen and Ruck Thawonmas, *Ritsumeikan University, Japan*

**Abstract:** In this paper, we present a new matrix factorization method for recommender system problems, named bounded-SVD, which utilizes the constraint that all the ratings in the rating matrix are bounded within a pre-determined range. In our proposed method, the bound constraints are included in the objective function so that both the task of minimizing errors and the constraints are taken into account during the optimization process. For evaluation, we compare the performance of bounded-SVD with an existing method, called Bounded Matrix Factorization (BMF), which also uses the bound constraints on the ratings. The results on major real-world recommender system datasets show that our method outperforms BMF in almost cases and it is also faster and more simple to implement than BMF. Moreover, the way the bound constraints are integrated in bounded-SVD can also be applied to other optimization problems with bound constraints as well.

## **Enhanced K-Strange Points Clustering Algorithm**

Terence Johnson and Santosh Kumar Singh, *AMET University Chennai, Thakur College of Science and Commerce Kandivali (E) Mumbai, India.*

**Abstract:** The algorithm proposed in this paper enhances the K Strange points clustering algorithm by selecting the first of unchanging K strange points as the minimum of the dataset and then finds the next strange point as the point which is the farthest from the minimum and continues this process till it finds the K points which are the farthest and almost equally spaced from each other. It then assigns the remaining points in the dataset into clusters formed by these K farthest or Strange points. The algorithm presented in this paper successfully addresses the issues related to longer execution time and formation of inaccurate clusters seen in the K Strange points clustering algorithm.



# Paper Session II

## Scalable Honeypot Architecture for Identifying Malicious Network Activities

Gokul Kannan Sadasivam and Chittaranjan Hota, *BITS-Pilani Hyderabad Campus*, India

**Abstract:** Server honeypots are computer systems that hide in a network capturing attack packets. As the name goes, server honeypots are installed in server machines running a set of services. Enterprises and government organisations deploy these honeypots to know the extent of attacks on their network. Since, most of the recent attacks are advanced persistent attacks there is much research work going on in building better peripheral security measures. In this paper, the authors have deployed several honeypots in a virtualized environment to gather traces of malicious activities. The network infrastructure is resilient and provides much information about hacker's activities. It is cost effective and can be easily deployed in any organisation without specialized hardware.

## Efficient LALRED for Congestion Avoidance using Automata-Like Solution

Shalu G. Mahajan, *MGM's College of Engineering Nanded*, India

**Abstract:** For ELALRED algorithm the concept of a Learning Automata-Like (LAL) mechanism devised for congestion avoidance in wired networks. The algorithm, named as Efficient LAL Random Early Detection (ELALRED), is founded on the principles of the operations of existing RED congestion-avoidance mechanisms, augmented with an LAL philosophy. The primary objective of ELALRED is to optimize the value of the average size of the queue used for congestion avoidance and to consequently reduce the total loss of packets at the queue. We attempt to achieve this by stationing a LAL algorithm at the gateways and by discretizing the probabilities of the corresponding actions of the congestion-avoidance algorithm. At every time instant, the LAL scheme, in turn, chooses the action that possesses the maximal ratio between the number of times the chosen action is rewarded and the number of times that it has been chosen. In ELALRED, we simultaneously increase the likelihood of the scheme converging to the action, which minimizes the number of packet drops at the gateway. ELALRED approach helps to improve the performance of congestion avoidance by adaptively minimizing the queue-loss rate and the average queue size. Simulation results obtained using NS2 establish the improved performance of ELALRED over the LALRED and traditional RED methods which were chosen as the benchmarks for performance comparison purposes.

## Optimized Technique For Capacitated Minimum Forest Problem In Wireless Sensor Networks

Shwetal R. Jaiswal, *K. S. Institute of Engineering and Technology, Hingoli*, India

**Abstract:** Recent advances in low power radios and sensor technology have enabled the pervasive deployment of sensor networks consisting of sensor nodes that are very small in size and relatively inexpensive. Wireless Sensor Networks (WSNs) have been seen more as a solution to large scale tracking and monitoring applications, because their low data rate, low energy consumption and short range communication presents the great opportunity to instrument and monitor the physical world at unprecedented scale. However realization of WSNs needs to satisfy constraints introduced by factors such as limited power, limited communication bandwidth, limited processing capacity, and small storage capacity. Therefore, the design of efficient technique for optimizing the capabilities of networks is becoming an increasingly critical aspect in networking. This paper addresses constrained optimization problems namely the Capacitated Minimum Forest (CMF) problem. To utilize the critical WSNs resources precisely, the development of algorithms with quality guaranteed solutions in WSNs is needed. We proposed that optimal approximation algorithms achieve highest optimization goal which minimize Cost of network resource consumption.

# Paper Session III

## Heuristic-based Real-Time P2P Traffic Identification

Jagan Mohan Reddy and Chittaranjan Hota, *BITS-Pilani Hyderabad Campus*, India

**Abstract:** Peer-to-Peer (P2P) networks have seen a rapid growth, spanning diverse applications like online anonymity (Tor), online payment (Bitcoin), file sharing (BitTorrent), etc. However, the success of these applications has raised concerns among ISPs and Network administrators. These types of traffic worsen the congestion of the network, and create security vulnerabilities. Hence, P2P traffic identification has been researched actively in recent times. Early P2P traffic identification approaches were based on port-based inspection. Presently, Deep Packet Inspection (DPI) is a prominent technique used to identify P2P traffic. But it relies on payload signatures which are not resilient against port masquerading, traffic encryption and NATing. In this paper, we propose a novel P2P traffic identification mechanism based on the host behaviour from the transport layer headers. A set of heuristics was identified by analysing the off-line datasets collected in our testbed. This approach is privacy preserving as it does not examine the payload content. The usefulness of these heuristics is shown on real-time traffic traces received from our campus backbone; where in the best case only 0.20% of flows were unknown.

## Experiments in Encrypted and Searchable Network Audit Logs

Bhanu Prakash Gopularam, Sashank Dara and Nalini Niranjan, *Cisco Systems India Pvt. Ltd, IIT-Bangalore, Nitte Meenakshi Institute of Technology Bangalore*, India

**Abstract:** We consider the scenario where a consumer can securely outsource their network telemetry data to a Cloud Service Provider and enable a third party to audit such telemetry for any security forensics. Especially we consider the use case of privacy preserving search in network log audits. In this paper we experiment with advances in *Identity Based Encryption* and *Attribute-Based encryption* schemes for auditing network logs.



### **SAP University Alliance**

Since July 2008, SCIT is a University Alliance Partner of SAP. The objective is to provide a cost-effective means of imparting SAP ERP hands-on training to our students as a part of the curriculum. The University Alliance Partnership Program of SAP is offered through the SAP University Competency Centers (UCC) worldwide. SAP curriculum is integrated in the three semester of the MBA (ITBM) program. Students undergo rigorous hands-on experience and domain exposure in configuration and business process integration (BPI) in four functional modules namely Financial Accounting, Controlling, Materials Management and Sales & Distribution in the SAP ECC 6.0 environment. SCIT is the first Institute in India to integrate SAP Business ByDesign in its curriculum. The students hands-on practice certain core business scenarios in Supply Chain, Pre-sales, Financial Accounting, Procurement, Sales and HR.



### **Information Technology Entrepreneurship and Leadership Forum**

SCIT is known for creating global IT professionals who are trained to be leaders and unleash their entrepreneurial spirit. iT ELF is an endeavour of SCIT that works as a catalyst for nurturing entrepreneurial talents; it is also a resource centre creating awareness relating to entrepreneurship development and management. This forum provides budding IT entrepreneurs and leaders a platform to discuss and nurture ideas, enhance perspectives, supercharge risk appetite and unleash the leadership skills. iT ELF is open for all those aspiring to start their venture or aiming to be leaders and change agents in their domains. iT ELF is fostered by SCIT, a constituent of Symbiosis International Deemed University (SIU), an institute that is known for creating global IT professionals.



### **Eklavya ... The Mavericks of Theatre**

We as Eklavya team plan to initiate and take the first step in making people aware of various issues, be it corporate, social, political, environment, in the form of street plays, mimes, road shows, experimental theatre and also processions. We also plan to organise peace processions to bring awareness among people of issues like AIDS, condom use, child labour, female feticide, patriotism, business ethics etc. Hence Eklavya is a CSR initiative of SCIT (Symbiosis Centre for Information Technology) started by students with the sole purpose of making true leaders!



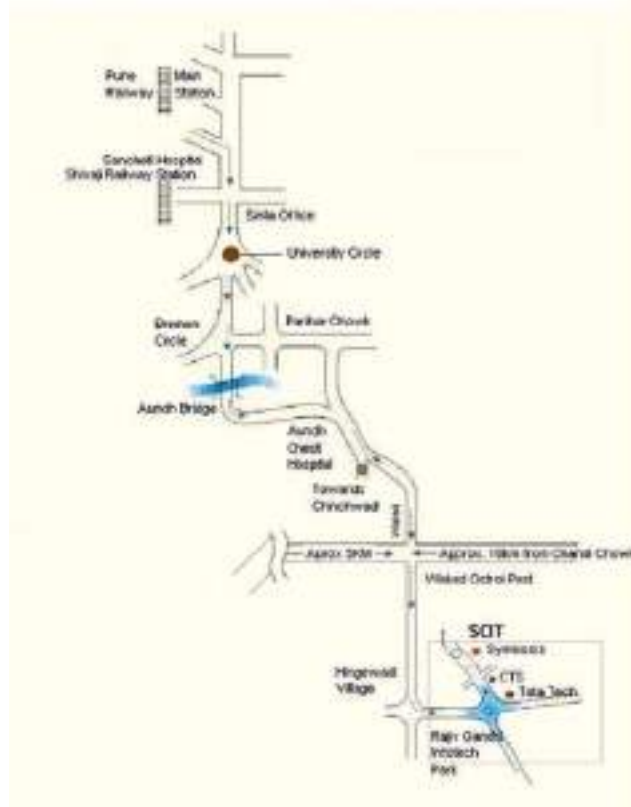
### **Student Social Responsibility**

“We will be the change we want to see” was the thought that spurred the young students at SCIT to think about their duties for Mother Earth and thus was born the Student Social Responsibility (SSR) committee. SSR aims to improve the social awareness among bright minds that also are academic all-rounder. In spite of their hectic schedule, these MBA aspirants have strong determination to resolve and give back to the society thus bringing in enthusiastic participation in SSR. It contributed towards the betterment of lesser privileged children and to their upliftment by organizing fund raisers. SCIT SSR aims to highlight, celebrate and inspire thought conscious youth into understanding their social responsibility and create a natural revolution to protect Mother Earth and be a part of a vision that seeks a better planet for tomorrow!

### **Drishtikon**

Drishtikon is a Management Club of SCIT, Open to all Thought Leaders, who believe in collaborative learning and who believe in to be the change, they want to see. It is committed to enhance management insight of its members through sharing case Studies, Discussion threads, Quizzes and articles concerned with latest happening in the world of management. Drishtikon conducts various sessions on Finance, SMDPS (Special Management Development Program for Students), Marketing, Business Strategies and New Trends.





## Symbiosis Centre for Information Technology (SCIT)

Plot 15, Phase-I,  
Rajiv Gandhi InfoTech Park,  
Hinjawadi,  
Pune - 411057  
Maharashtra  
India.

Tel: 91 - 020- 2293 4308 / 4309 / 4310

Fax: 91 - 020-2293 4312